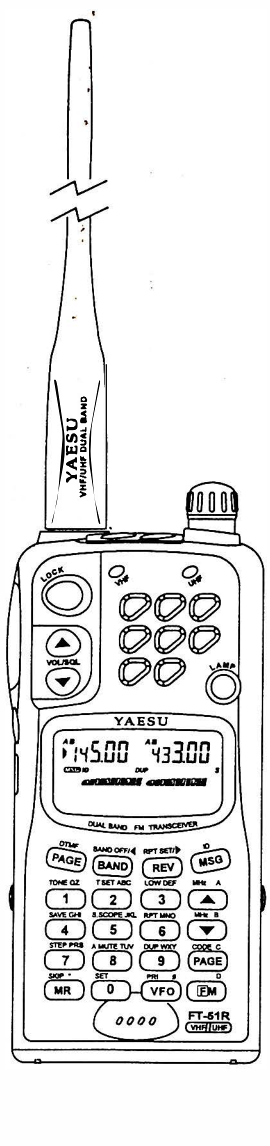
FT-51R

Technical Supplement



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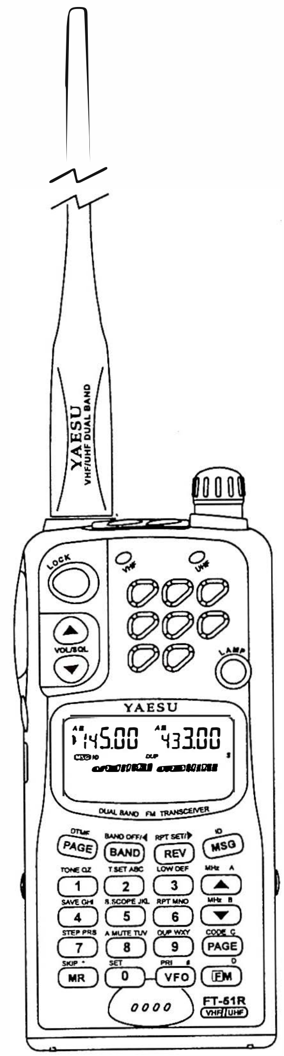
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Contents

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FT - 51R

Technical Supplement



This manual provides the technical information necessary for servicing the FT-51R Dual-Band handheld amateur transceiver.

Servicing this equipment requires expertise in handling surface-mount chip components. Attempts by non-qualified persons to service this equipment may result in permanent damage not covered by the warranty, and may be illegal in some countries.

Two PCB layout diagrams are provided for each double-sided board in this transceiver. Each side of the board is referred to by the type of the majority of components installed on that side ("leaded" or "chip-only"). In most cases one side has only chip components, and the other has either a mixture of both chip and leaded components (trimmers, coils, electrolytic capacitors, ICs, etc.), or leaded components only.

While we believe the information in this manual to be correct, Yaesu Musen assumes no liability for damage that may occur as a result of typographical or other errors that may be present. Your cooperation in pointing out any inconsistencies in the technical information would be appreciated.

Yaesu Musen reserves the right to make changes in this transceiver in the interest of technological improvements, without notification to the owners.

Specifications

General

Frequency range:	(Rx) 110~180 MHz 420~470 MHz (Tx) 144~148 MHz 430~450 MHz
Channel steps:	5, 10, 12.5, 15, 20, 25 & 50 kHz
Repeater shift:	±600 kHz , ±5 MHz (programmable)
Emission type:	F3, F2
Supply voltage:	4.0 ~ 12-V DC

Current Consumption:	**VHF**	**UHF**
Auto Power Off:	200 μA	200 μA
Stby (Saver on):	16.9 mA	16.3 mA (34 mA dual-rx)
Stby (Saver off):	52 mA	49 mA (85 mA dual-rx)
Tx (5 W @ 9.6VDC):	<1.6A	<1.9A

Antenna (BNC jack):	YHA-55 rubber flexible
Case size (WHD):	57 × 122 × 26.5 mm w/FNB-31
Weight (approx.):	330 grams with FNB-31 & antenna

Receiver

Circuit type:	Double-conversion superheterodyne
IFs:	45.05 MHz & 455 kHz (VHF) 58.525 MHz & 455 kHz (UHF)
12-dB SINAD Sensitivity:	< 0.158 μV (VHF) < 0.180 μV (UHF)
Adjacent channel selectivity:	> 65 dB VHF > 60 dB UHF
Intermodulation:	> 65 dB (VHF), > 60 dB (UHF)
AF output:	0.2 W @ 8Ω for 10% THD

Transmitter

RF output:	See the chart at right
Frequency stability:	Better than ± 5 ppm (at -10°C ~ +60° C)
Modulation system:	Variable reactance
Maximum deviation:	± 5 kHz
FM Noise (@ 1 kHz):	Better than –40 dB @ 1 kHz
Spurious emissions:	> 60 dB below carrier
AF distortion (@ 1 kHz):	< 5%, w/3.5 kHz deviation
Microphone type:	2-kΩ condenser

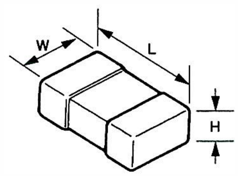
Battery Type	VHF Output	UHF Output
FBA-14 Dry Cell Case (4 x "AA" cells)	2.0 W	1.5 W
FNB-31(4.8V, 600 mAh)	2.0 W	1.5 W
FNB-33 (4.8V, 1200 mAh)	2.0 W	1.5 W
FNB-35 (7.2V, 900 mAh)	4.0 W	3.5 W
FNB-38 (9.6V, 600 mAh)	5.0 W	5.0 W

Specification subject to change without notice.

Chip Component Information

The diagrams below indicate some of the distinguishing features of common chip components.

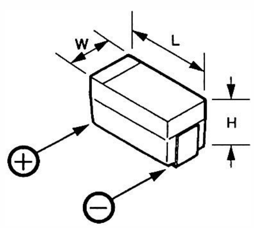
Ceramic Capacitors



(Unit: mm)

Type	L	W	H
2125	2.0	1.25	0.35~0.50
1608	1.6	0.8	0.65~0.95
1005	1.0	0.5	0.45~0.55

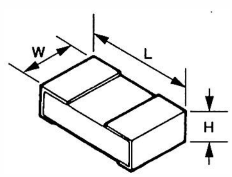
Tantalum Capacitors



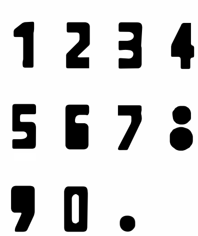
(Unit: mm)

Type	L	W	H
P	2.0	1.25	1.2
A	3.2	1.6	1.6
B	3.4	2.8	1.9
C	5.8	3.2	2.3

Resistors



Indicated Letters



(Unit: mm)

Type	L	W	H
1/10	2.0	1.25	0.5
1/16	1.6	0.8	0.45
1/16S	1.0	0.5	0.35

Type **RMC 1/10W, 1/16W**

Marking* **100, 222, 473 …**

473

Ten unit	One unit	Multiplier code
0	0	10^0
1	1	10^1
2	2	10^2
3	3	10^3
4	4	10^4
5	5	10^5
6	6	10^6
7	7	10^7
8	8	10^8
9	9	10^9

Examples:
100 = 10Ω
222 = 2.2kΩ
473 = 47kΩ

Chip Component Information

Replacing Chip Components

Chip components are installed at the factory by a series of robots. The first one places a spot of adhesive resin at the location where each part is to be installed, and later robots handle and place parts using vacuum suction.

For single-sided boards, solder paste is applied to the board is then baked to harden the resin and flow the solder. For double-sided boards, no solder paste is applied, but the board is baked (or exposed to UV light) to cure the resin before dip-soldering.

In our laboratories and service shops, small quantities of chip components are mounted manually by applying a spot of resin, placing with tweezers, and then soldering by very small dual streams of hot air (without physical contact during soldering). We remove the parts by first removing solder using a vacuum suction iron, which applies a light, steady vacuum at the iron tip, and then breaking the adhesive with tweezers.

The special vacuum soldering/de-soldering equipment is recommended if you expect to do a lot of chip replacements. Otherwise, it is usually possible to remove and replace chip components with only a tapered, temperature controlled soldering iron, a set of tweezers and braided copper solder wick. Soldering iron temperature should be below 280℃ (536F).

Precautions for Chip Replacement

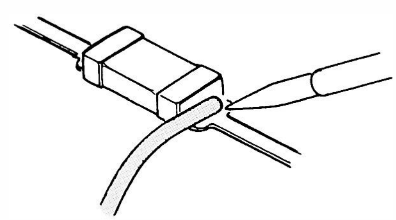
Do not disconnect a chip forcefully, or the foil pattern may peel off the board.

Never re-use a chip component. Dispose of all removed chip components immediately to avoid mixing with new parts.

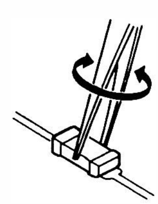
Limit soldering time to 3 seconds or less to avoid damaging the component and board.

Removing Chip Components

- Remove the solder at each joint, one joint at a time, using solder wick wetted with non-acidic flux as shown below. Avoid applying pressure, and do not attempt to remove the tinning from the chip's electrode.



- Grasp the chip on both sides with tweezers, and gently twist the tweezers back and forth (to break the adhesive bond) while alternately heating each electrode. Be careful to avoid peeling the foil traces from the board. Dispose of the chip when removed.

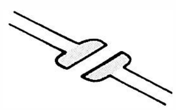


- After removing the chip, use the copper braid and soldering iron to wick away any excess solder and smooth the land for installation of the replacement part.

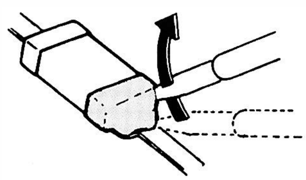
Installing a Replacement Chip

As the value of some chip components is not indicated on the body of the chip, be careful to get the right part for replacement.

- Apply a small amount of solder to the land on one side where the chip is to be installed. Avoid using too much solder, which may cause bridging (shorting to other Parts).



- Hold the chip with tweezers in the desired position, and apply the soldering iron with a motion line that is indicated by the arrow in the diagram below. Do not apply heat for more than 3 seconds.



- Remove the tweezers and solder the electrode on the other side in the manner just described.

Notes

CNTL Unit Removal

Turn the radio off then remove the battery and soft case, if used.

❒ Use a deep-ended wrench to remove the lock nut from the DIAL knob (Figure 1). Also remove the small screw located between the **EAR** and **MIC** jack on the top panel.

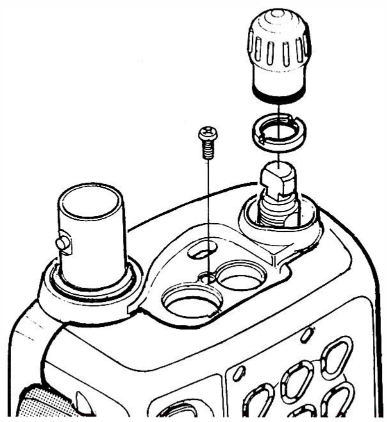


Figure 1.

❒ Lay the transceiver on a flat surface covered with a soft cloth to protect the front case from marring, and remove the eight (8) rear-panel screws (Figure 2). Be careful not to mix removed screws (some appear similar, but have different types of threading/pitch).

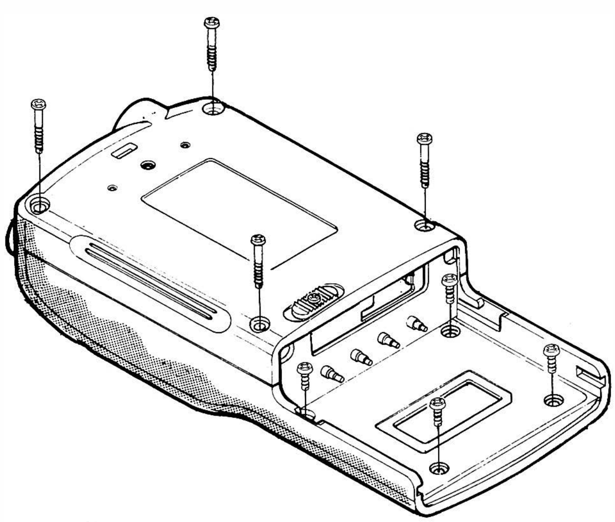


Figure 2.

❒ Carefully separate the front and rear transceiver halves, set the front half aside for now.

❒ Remove the three (3) screws as shown below, and separate the CONTACT assembly from the main unit. Be careful not to lose the battery release slide and its small screw.

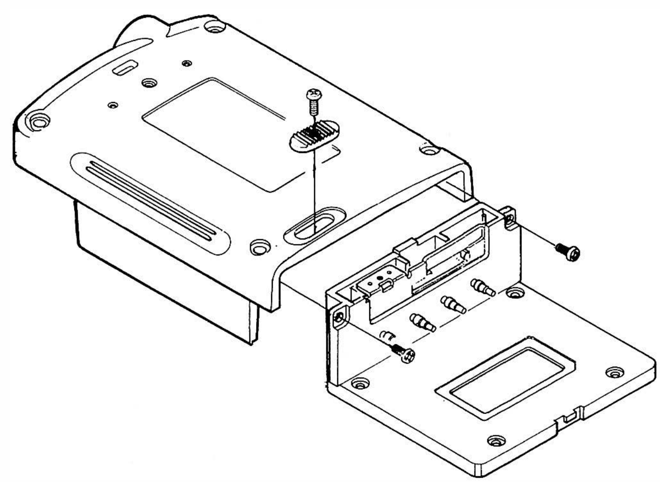


Figure 3.

❒ Disconnect the flat ribbon cable from it's connector on the CNTL Unit by using two fingertips to slide out the cable release, then unplug the cable from the Mother Unit (Figure 4).

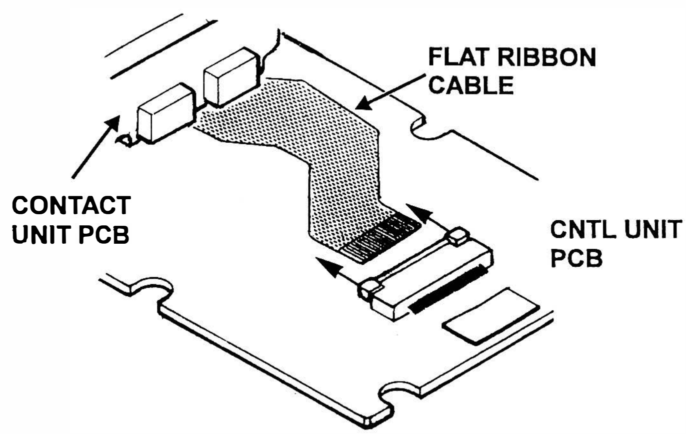


Figure 4.

❒ Next angle the CNTL Unit upward and outward away from the MAIN Unit.

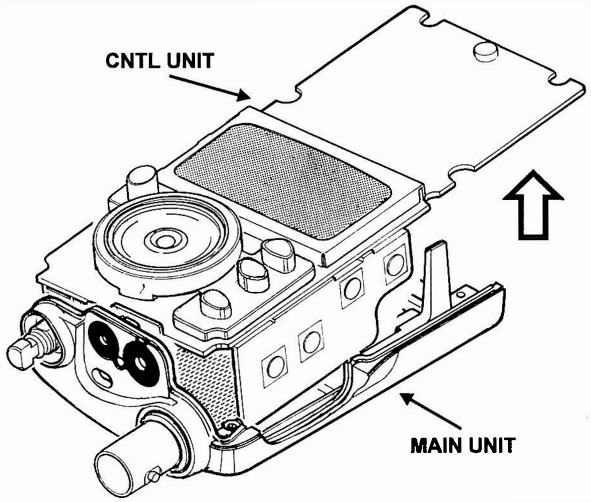


Figure 5.

Contact Unit Removal

❒ Use a small flat screw driver and slowly pry the two mating connectors and CONTACT Unit PCB free from the 144 and 430 Mother Unit boards, as shown below (Figure 6). Alternately pry between the two points to separate the unit. *Warning!* Use extreme caution during this step, as delicate surface-mounted components are located around the pry-points.

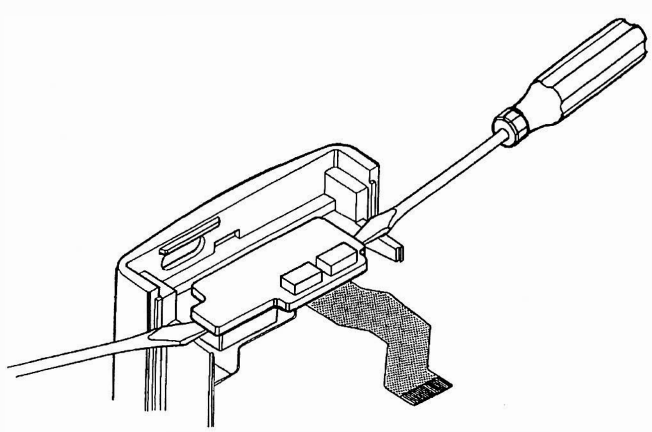


Figure 6.

144-Mother Unit Removal

❒ Referring to Figure 7, remove the five (5) screws from the 144 Mother Unit, then carefully lift the copper shield plate to expose the 144-Mother Unit assembly.

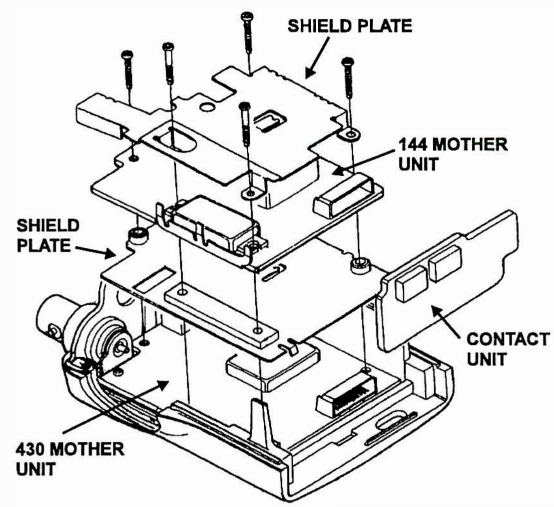


Figure 7.

❒ Lift the 144-Mother Unit up to free it from inter-board connector **J1001**.

430 Mother Unit Removal

❒ With the 144-Mother Unit removed, lift the shield plate to expose the 430-Mother Unit, as shown below (Figure 8).

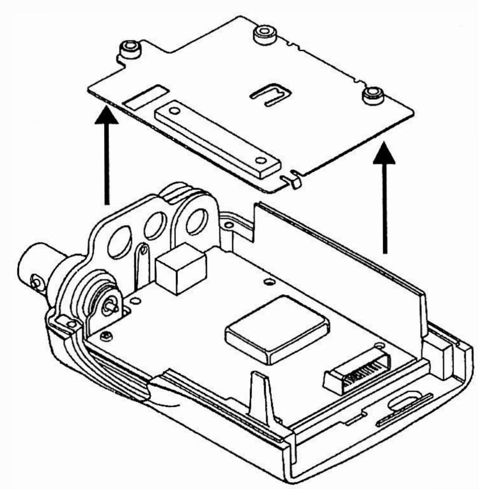


Figure 8.

❒ Remove the single screw at the upper-left corner of the 430-Mother Unit to remove the BNC antenna jack (see Figure 9 on top of next page).

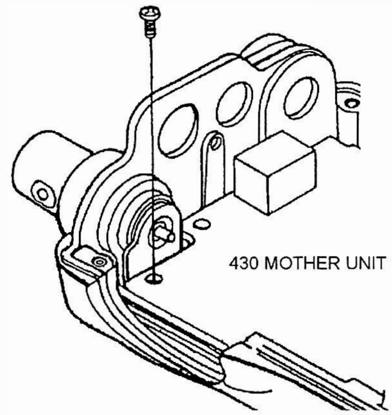


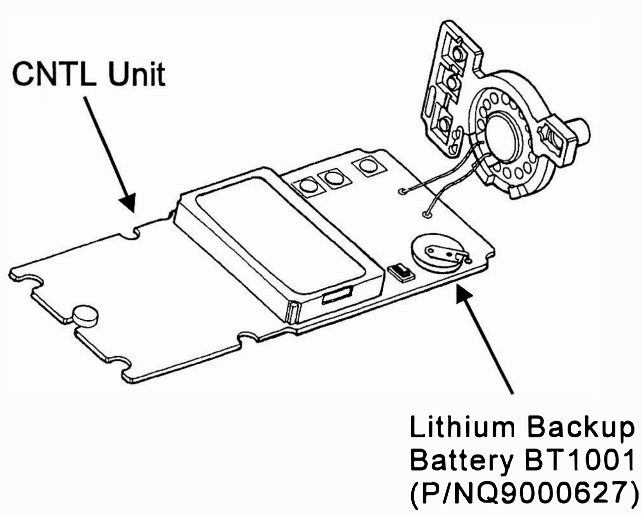
Figure 9.

❒ This completes the disassembly procedure, reassemble all units in the reverse manner, paying attention to screw type and location. With the CNTL Unit removed, the translucent keyboard membrane, PTT or POWER switch covers can be popped out for replacement if needed.

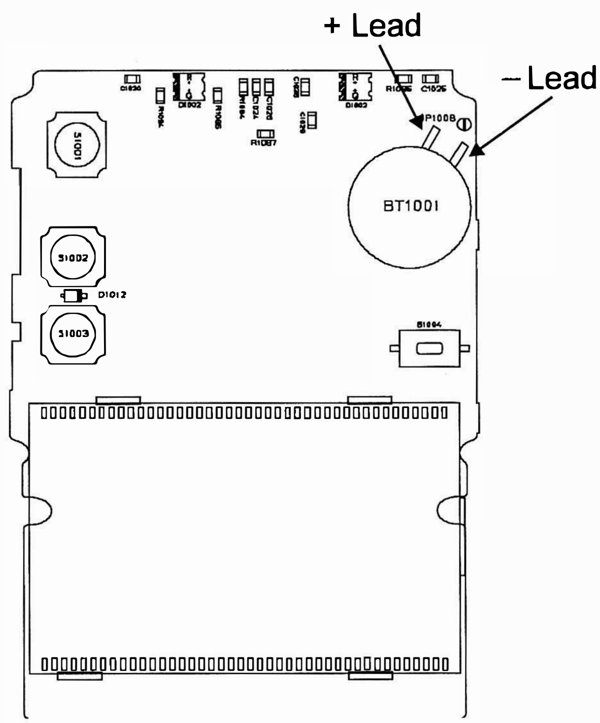
Be sure to keep the rubber gasket around the CNTL Unit **MIC** *&* **EAR** *jack, and to carefully align it with case cut-out when reinstalling the CNTL Unit into the case.*

Lithium Backup Battery Replacement

The lithium backup battery does not normally need to be replaced for several years. However, to replace the cell, order Yaesu P/N Q9000627.

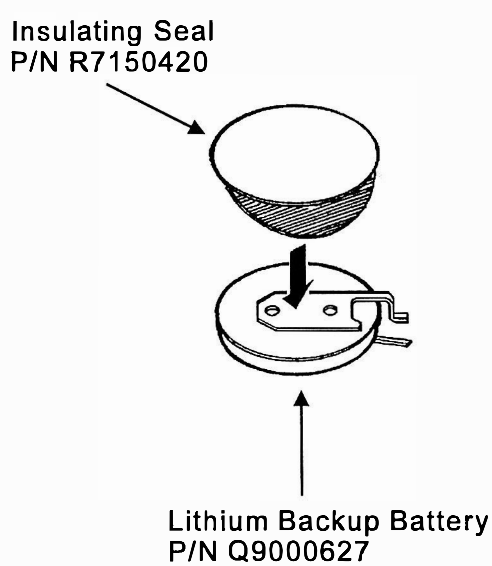


❒ With the CNTL Unit exposed, note the tab polarity of BT1001.

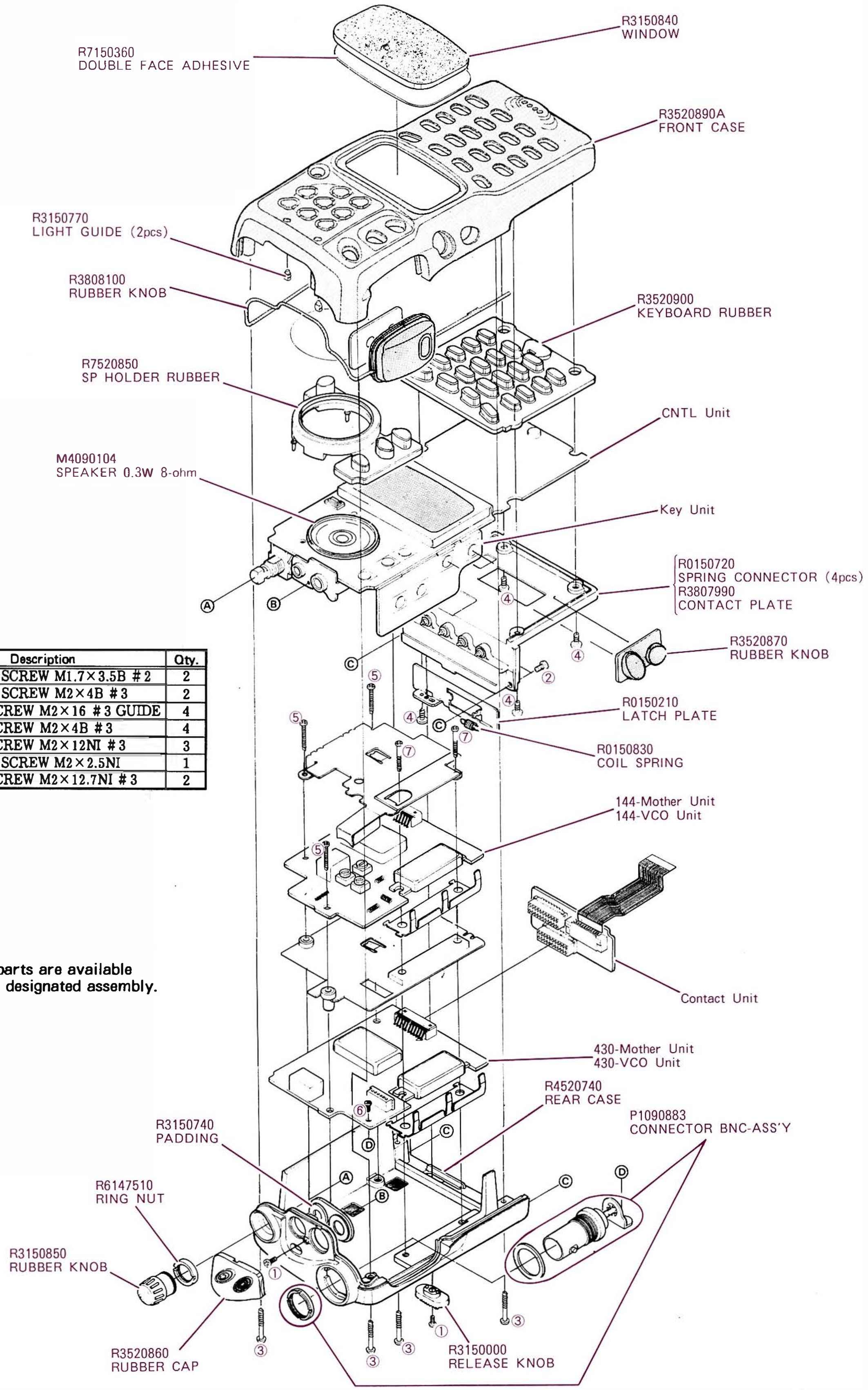


❒ To remove the old cell, carefully unsolder each terminal from the CNTL Unit PCB and lift it free.

❒ Mount the replacement cell in the similar manner, observing proper polarity when installing it. Next, peel off the adhesive backing from the plastic insulating seal (P/N R7150420), and place the seal on top of the cell.



Notes



REF.	YAESU P/N	Description	Qty.
①	U07135207	PAN HEAD SCREW M1.7×3.5B #2	2
②	U07240307	PAN HEAD SCREW M2×4B #3	2
③	U9900050	TAPTITE SCREW M2×16 #3 GUIDE	4
④	U9900051	TAPTITE SCREW M2×4B #3	4
⑤	U9900052	TAPTITE SCREW M2×12NI #3	3
⑥	U9900053	PAN HEAD SCREW M2×2.5NI	1
⑦	U9900055	TAPTITE SCREW M2×12.7NI #3	2

Non-designated parts are available only as part of a designated assembly.

The FT-51R is carefully aligned at the factory for the specified performance across the amateur band. Realignment should therefore not be necessary except in the event of a component failure. All component replacement and service should be performed only by an authorized Yaesu representative, or the warranty policy may be void.

The following procedures cover the sometimes critical and tedious adjustments that are not normally required once the transceiver has left the factory. However, if damage occurs and some parts subsequently are replaced, realignment may be required. If a sudden problem occurs during normal operation, it is likely due to component failure; realignment should not be done until after the faulty component has been replaced.

We recommend that servicing be performed only by authorized Yaesu service technicians who are experienced with the circuitry and fully equipped for repair and alignment. Therefore, if a fault is suspected, contact the dealer from whom the transceiver was purchased for instructions regarding repair. Authorized Yaesu service technicians realign all circuits and make complete performance checks to ensure compliance with factory specifications after replacing any faulty components.

Those who do undertake any of the following alignments are cautioned to proceed at their own risk. Problems caused by unauthorized attempts at realignment are not covered by the warranty policy. Also, Yaesu reserves the right to change circuits and alignment procedures in the interest of improved performance, without notifying owners.

Under no circumstances should any alignment be attempted unless the normal function and operation of the transceiver are clearly understood, the cause of the malfunction has been clearly pinpointed and any faulty components replaced, and realignment determined to be absolutely necessary.

The following test equipment (and thorough familiarity with its correct use) is necessary for complete realignment. Correction of problems caused by misalignment resulting from use of improper test equipment is not covered under the warranty policy. While most steps do not require all of the equipment listed, the interactions of some adjustments may require that more complex adjustments be performed afterwards. Do not attempt to perform only a single step unless it is clearly isolated electrically from all other steps. Have all test equipment ready before beginning, and follow all of the steps in a section in the order presented.

Required Test Equipment

- ❒ RF Signal Generator with calibrated output level at 500 MHz
- ❒ Deviation Meter (linear detector)
- ❒ In-line Wattmeter with 5% accuracy at 500 MHz
- ❒ 50-Ω RF Dummy Load
- ❒ 8-Ω AF Dummy Load
- ❒ Regulated DC Power Supply adjustable from 3 to 12 VDC, 2A
- ❒ Frequency Counter: 0.2 ppm accuracy at 500 MHz
- ❒ AF Signal Generator
- ❒ AC Voltmeter
- ❒ DC Voltmeter: high impedance
- ❒ VHF/UHF Sampling Coupler
- ❒ SINAD Meter

Alignment Preparation & Precautions

A 50-Ω dummy load and in-line wattmeter must be connected to the main antenna jack in all procedures that call for transmission, except where specified otherwise. Correct alignment is not possible with an antenna.

After completing one step, read the following step to determine whether the same test equipment will be required. If not, remove the test equipment (except dummy load and wattmeter, if connected) before proceeding.

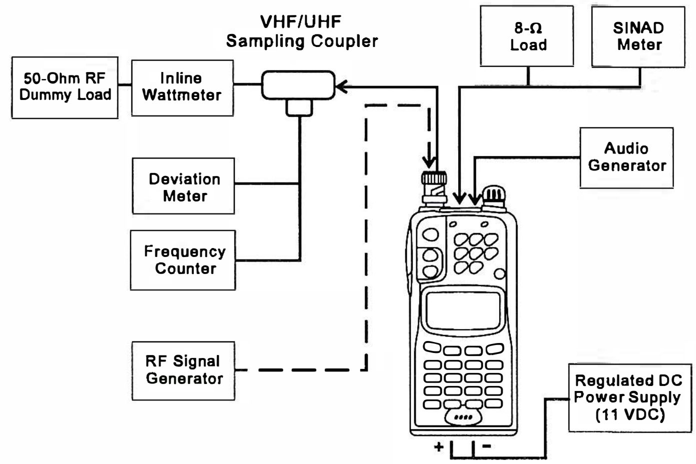
Correct alignment requires that the ambient temperature be the same as that of the transceiver and test equipment, and that this temperature be held constant between 20° and 30°C (68° - 86°F). When the transceiver is brought into the shop from hot or cold air, it should be allowed some time to come to room temperature before alignment.

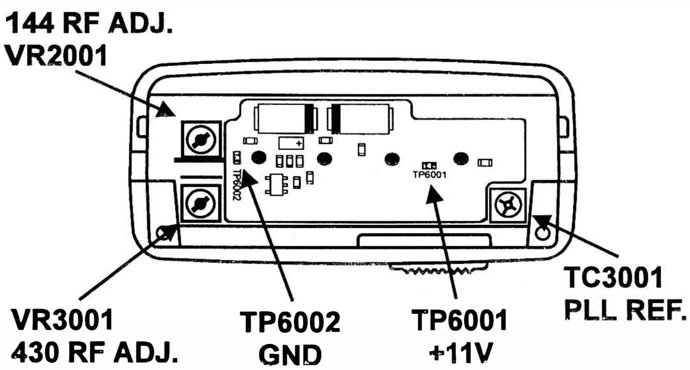
Whenever possible, alignments should be made with oscillator shields and circuit boards firmly affixed in place. Also, the test equipment must be thoroughly warmed up before beginning.

Note: Signal levels in dB referred to in the alignment procedure are based on 0 dBμ = 0.5 μV.

Alignment Power Connections

The FT-51R must be partially disassembled to perform the following three steps. The contact assembly must be removed to allow access to the adjustment points, and power must be applied using miniature hook-on clips. The graphics below show the test-point locations and how to connect the hook-on clips. Refer to the *PCB Access & Disassembly* chapter for proper disassembly instructions, and ensure you have the proper hook-on clips before beginning.

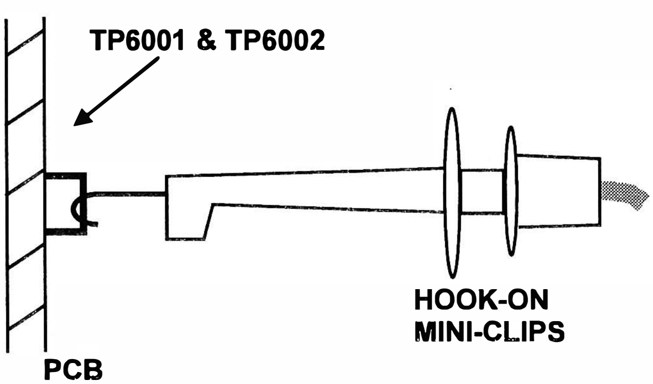




Alignment Points & Power Connection

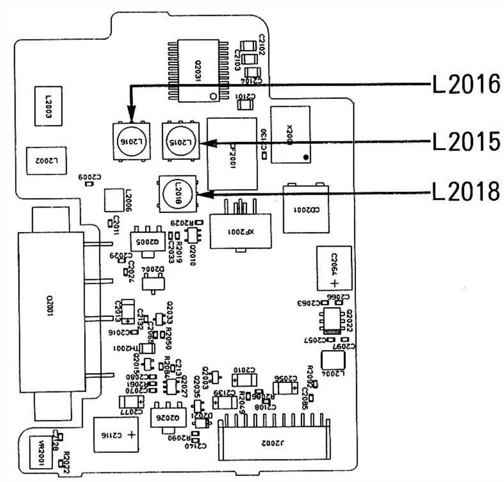
PLL & Transmitter

Set up the test equipment as shown for transceiver alignment. With the battery contact assembly removed, apply 11 VDC power to the transceiver using miniature hook-on clips applied to the points on the Contact Unit PCB as shown below.

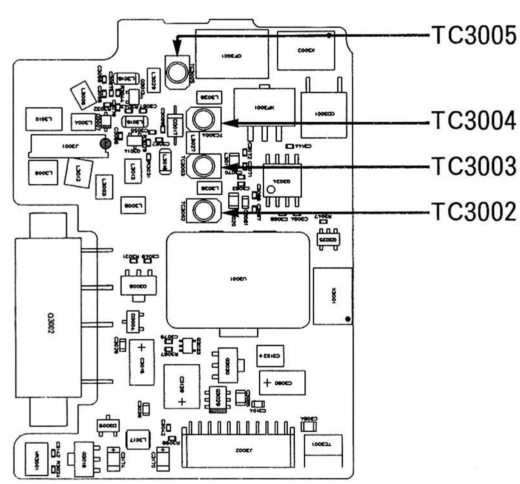


Hook-On Clip DC Power Connection

Refer to the drawings below for VHF and UHF Alignment Points.



144-Mother Unit Alignemnt Points



430-Mother Unit Alignment Points

PLL Reference Frequency

❐ With the wattmeter, dummy load and frequency counter connected to the antenna jack, and while tuned to the center of the UHF band, key the transmitter and adjust **TC3001** on the 430-Mother Unit, if necessary, so the counter frequency is within 100 Hz of the displayed frequency on the FT-51R.

Transmitter Power Adjustment

❐ Connect the 50-Ω dummy load and inline wattmeter to the antenna jack. Tune to the UHF band center and select high power output. Key the transmitter and adjust **VR3001** on the 430-Mother Unit for 5 W ± 0.2W on the meter.

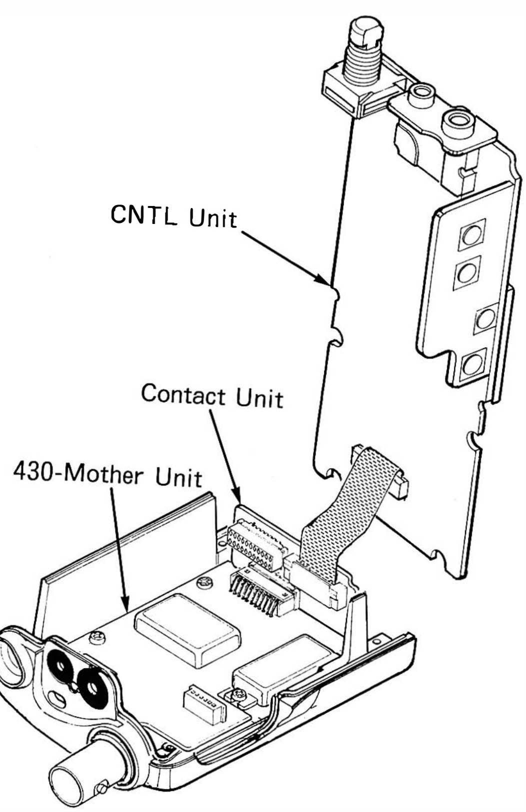
❐ Tune to VHF band center and select high power output. Key the transmitter and adjust **VR2001** on the 144-Mother Unit for 5 W ± 0.2W on the meter.

144-Mother Unit Interstage Transformer Alignment

❐ Connect the RF signal generator to the antenna jack, and connect the 8-Ω dummy load and SINAD meter to the **EAR** jack.

❐ Tune the transceiver and the RF signal generator to the band center, and inject a signal modulated with ±3.5 kHz deviation of a 1-kHz tone.

❐ Adjust **L2015**, **L2016** and **L2018** on the 144-Mother Unit for optimum 12 dB SINAD (at least -9 dBμ for 12 dB SINAD).



430-Mother Unit Interstage Transformer Alignment

Important! Before proceeding, ensure the 430-Mother Unit is grounded to the transceiver rear case by reinstalling the five previously removed screws.

❐ Unplug the CONTACT Unit from the 144- & 430-Mother Unit assembly. Next, remove the 5 screws from the shield case on the 144-Mother Unit, and remove the shield case.

❐ Remove the 144-Mother Unit to expose the 430-Mother Unit. Plug the CONTACT Unit into the 430-Mother Unit. Connect the RF signal generator to the antenna jack, and 8-Ω dummy load and SINAD meter to the **EAR** jack.

❐ Tune the transceiver and the RF signal generator to the band center and inject a signal modulated with ±3.5 kHz deviation of a 1-kHz tone.

❐ Adjust **TC3002~TC3005** for optimum 12 dB SINAD (at least -8dBμ for 12 dB SINAD). This complete the first part of the alignment, re-assemble the transceiver and proceed to the *Internal System Alignment Routine*.

Internal System Alignment Routine

The remainder of the alignment uses a routine programmed in the transceiver. This routine simplifies many previously complex discrete component settings and adjustments with digitally-controlled settings via front panel buttons and LCD indications.

Transceiver adjustments include:

- Band & IF Selection *(non-adjustable)*
- S-Meter Full Scale & S-1 Adjustment
- Squelch Threshold & Tight Adjustment
- Modulation (Low & High) Adjust

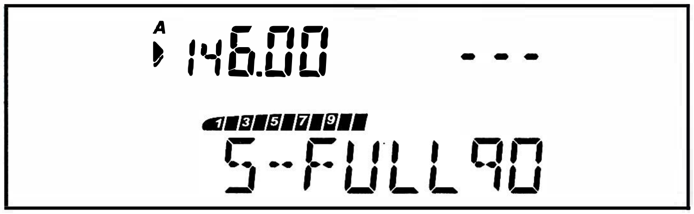
❐ To begin, set the transceiver to the VHF and UHF band center, then turn the transceiver off. Next, press and hold (VOL/SQL ▲)/(VOL/SQL ▼) and (DTMF CALL) together while powering the radio again. The display now shows the first setting. *Note that the first two settings are not adjustable and are left as set from the factory.*

In the alignment, each adjustment is selected by rotating the DIAL knob. Alignment is performed by holding the (F/M) key for ½ second (**F** *blinks*), then injecting a signal of the required frequency and level.

Pressing (F/M) after a level setting or adjustment is made stores the entry. To exit the alignment routine, press (DTMF CALL). After performing the system alignment in it's entirety, individual settings can be returned to and adjusted should the need arise.

VHF Alignment

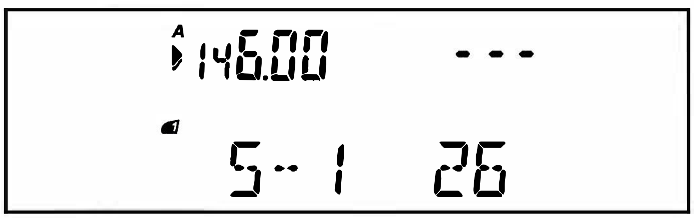
S-Meter Full-Scale Adjust(VHF)



❒ If you haven't done so already, perform the power-on key combination previously described then press (BM)→(BAND) so that the right display blanks. Next hold (BM) for ½ second ((F) blinks), *at the beginning of each selection.*

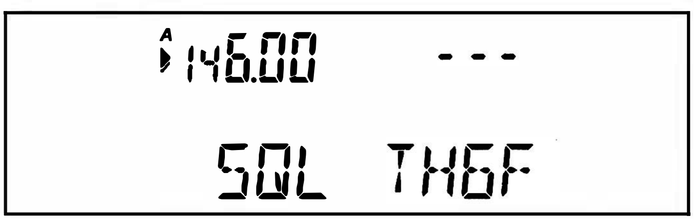
❒ Inject a +20dBμ RF signal (±3.5kHz deviation @ 1-kHz) to the antenna input, press (BM) to save the setting ((F) turns off), then rotate the DIAL knob for the next setting.

Low-Scale S-1 Adjustment(VHF)



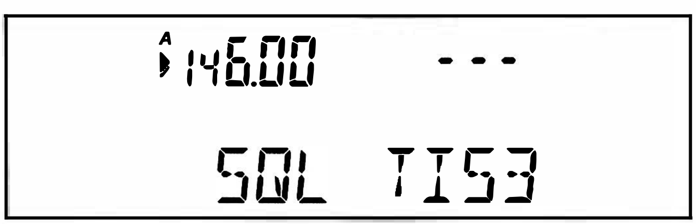
❒ Adjust the generator level to -5dBμ, press (BM) and rotate the DIAL for the next setting.

Squelch Preset Threshold(VHF)



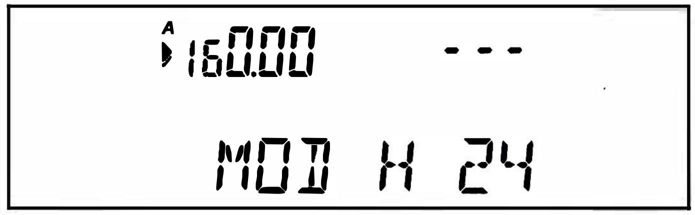
❒ Adjust the generator level for a -11dBμ signal, press (BM) and rotate the DIAL for the next setting.

Squelch Preset Tight (VHF)



❒ Adjust the generator level for a -5dBμ signal, then press (BM) and rotate the DIAL for the next setting.

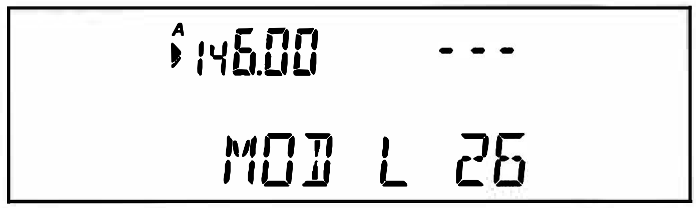
Tx Deviation (VHF) For A3, B3 & C3 Versions only.



❒ While tuned to 160.000 MHz, adjust the AF generator level for 25 mV_{rms} @1 kHz to the **MIC** jack.

❒ Hold (BM) for ½ second, then key the tx and press (▲)/(▼) to obtain ±4.2 ~ 4.5 kHz on the deviation meter (±3.7 ~ 4.0 kHz for A3 version). Press (BM) and rotate the DIAL knob for the next setting.

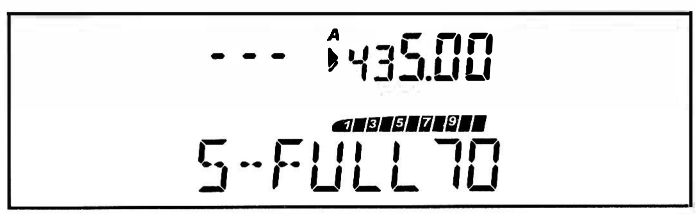
Tx Deviation (VHF)



❒ Tune to 146.000 MHz and adjust the AF generator for 25 mV_{rms} output @ 1 kHz to the **MIC** jack. Key the transmitter and press (▲)/(▼) to obtain ±4.2 ~ 4.5 kHz indicated on the deviation meter (±3.7 ~ 4.0 kHz for A1, A2 & A3 versions). Press (BM) and rotate the DIAL knob for the next setting.

UHF Alignment

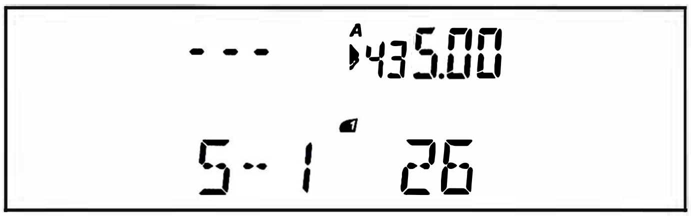
S-Meter Full-Scale Adjust(UHF)



❒ Press (BM)→(BAND) so that the *left* display blanks. Remember to hold (BM) for ½ second ((F) blinks), *at the beginning of each selection.*

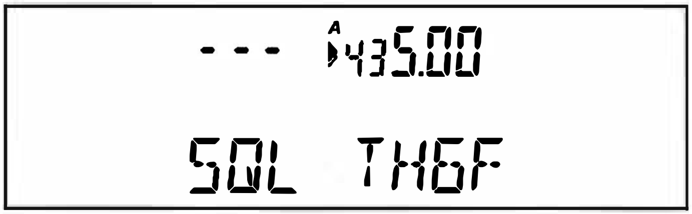
❒ Inject a +20dBμ RF signal (±3.5kHz deviation @ 1-kHz), press (BM) to save the entry ((F) stops blinking), then rotate the DIAL knob for the next setting.

Low-Scale S-1 Adjustment(UHF)



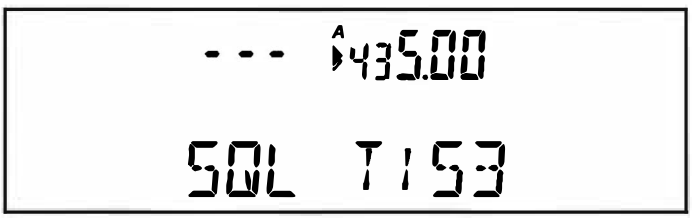
❒ Adjust the RF signal generator level for -5dBμ, press (F/M) and rotate the DIAL for the next setting.

Squelch Preset Threshold(UHF)



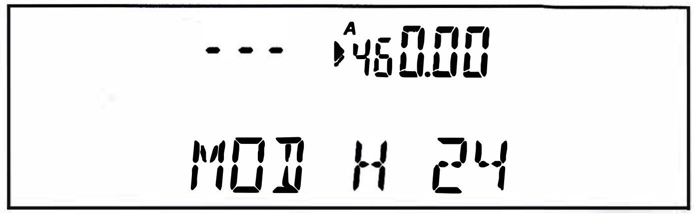
❒ Adjust the RF signal generator level for -11dBμ, press (F/M) and rotate the DIAL for the next setting.

Squelch Preset Tight (UHF)



❒ Adjust the RF signal generator level for -5dBμ, then press (F/M) and rotate the DIAL for the next setting.

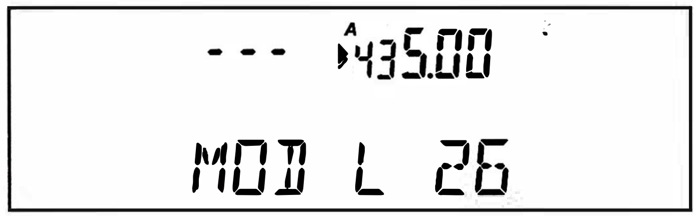
Tx Deviation (UHF) for A3, B3 & C3 Versions only



❒ While tuned to 460.000 MHz, adjust the AF generator for 25 mV_{rms} output @ 1 kHz to the **MIC** jack.

❒ Hold (F/M) for ½ second, then key the transmitter and press (▲ MHz A)/(▼ MHz B) to obtain ±4.2 ~ 4.5 kHz indicated on the deviation meter (±3.7 ~ 4.0 kHz for A3 version). Press (F/M) and rotate the DIAL knob for the next setting.

Tx Deviation Adjustment UHF



❒ Return to the UHF band center, then adjust the AF generator attenuator level for 25 mV_{rms} @ 1 kHz to the **MIC** jack. Key the transmitter and press (▲ MHz A)/(▼ MHz B) to obtain ±4.2 ~ 4.5 kHz indicated on the deviation meter (±3.7 ~ 4.0 kHz for A1, A2 & A3 versions).

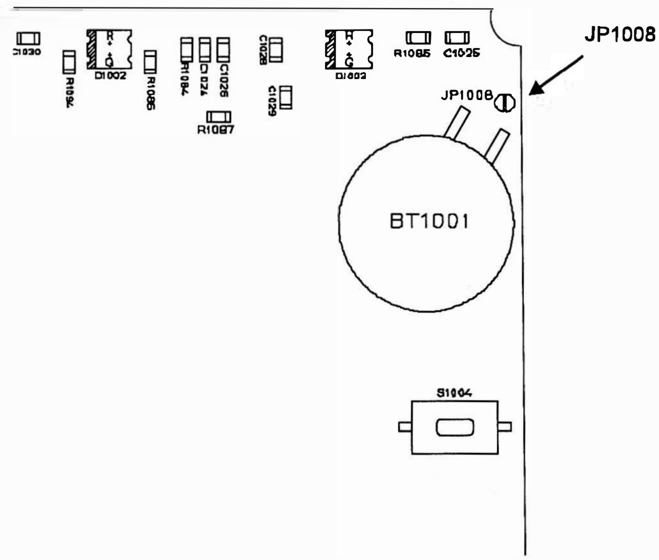
This completes the internal alignment routine, to save all settings and exit, press (CALL), the frequency display will return to normal.

CPU Reset

As a last resort, if you are unable to gain control of the transceiver, the FT-51R can be reset from the keypad to clear all settings, memories, channel step and repeater shifts to their factory defaults.

To do this, hold MR, VFO and 2 depressed while turning on the transceiver. If CPU problems remain after performing the soft reset, a hard CPU reset may be performed as follows.

- ❒ Turn the transceiver off and disconnect all cables.
- ❒ Separate the front and rear transceiver body halves (as shown in *Transceiver Disassembly* on page 2-1).
- ❒ Remove the solder from jumper **JP1008** on the CNTL Unit near the lithium battery(as shown in the drawing).
- ❒ After waiting several minutes, resolder the jumper and reassemble the transceiver.



JP1008 Location

The FT-51R electronics consists of three major boards: the 144 and 430 (MHz) motherboards (or Mother Units) and the Control Unit, and numerous minor boards that mount on these. The motherboards include the receiver front ends, IF and PLL subsystem ICs, and support daughter boards for transmit stages, local VCOs, supply regulation and switching circuits. The Control Unit includes the microprocessors and tone generator/decoder chips, and supports daughter boards for the display, keys and keypad, audio circuits and an contact board for coupling with the motherboards. While reading this description, you can refer to the block diagram for an overview of the major circuit blocks, and to the schematic diagrams for component details.

Antenna Duplexer

Incoming RF from the antenna jack passes through a 450-MHz low-pass filter on the 430 Mother Unit before application to two band-switching networks: coil L3008, diode D3003 & 3006 and capacitor C3040 on the 430 Mother Unit for UHF signals; and coil L2006, diode D2003 & 2007 and capacitor C2026 on the 144 Mother Unit for VHF signals. These networks filter VHF signals from the UHF receiver and UHF signals from the VHF receiver, allowing each band to operate independently while sharing the same antenna connection.

VHF Reception

VHF signals passed by the duplexer are applied to a varactor-tuned band-pass filter consisting of L2016 and L2019 before RF amplification by Q2032 (2SC4537). The amplified RF is then band-pass filtered again by varactor-tuned resonators L2015/D2018 and L2018 to ensure pure in-band input to 1st mixer Q2029/D2017 (2SC4537). Tuning voltage for the varactors is provided by VHF PLL Q2007, buffered by Q2014 (2SK880GR).

Buffered 189.05 ~ 199.05-MHz output from the 144-VCO Unit is amplified by Q2002 (2SC4537) and applied to the 1st mixer. The resulting 45.05-MHz 1st mixer product is passed through monolithic crystal filter XF2001(± 7.5-kHz BW) to strip away all but the desired signal, which is then amplified by Q2028 (2SC4215Y) before delivery to FM IF subsystem IC Q2031 (TK10930V), containing the 2nd mixer, 2nd local oscillator, limiter amplifier, noise amplifier, S-meter amplifier and squelch gates. A 2nd local signal is generated from 44.595-MHz crystal X2001, which produces the 455-kHz 2nd IF when mixed with the 1st IF signal within Q2031. The 2nd IF is passed through ceramic filter CF2001 to strip away unwanted mixer products, and is then applied to the limiter amp in Q2031, which removes amplitude variations in the 455-kHz IF before detection of the speech by ceramic discriminator CD2001. Detected audio from pin 12 of Q2031 is delivered to the CNTL Unit.

VHF Squelch Control

When no carrier is received, noise at the output of the detector stage in Q2031 is amplified and band-pass filtered by the noise amp section of Q2031 and the network between pins 19 and 20, and then rectified by D2013. The resulting DC squelch control voltage is passed to pin 99 of Main CPU Q1002. While no carrier is received, pin 54 of Q1002 remains low, signaling pin 8 of Sub CPU Q1001 (M38223E4HP) on the Control Unit to keep the green (Busy) half of the VHF LED off, and holding the AF MUTE line low to block VHF receiver audio from passing through analog gate Q1015-1 while no signal is being received, and during transmission.

When a carrier appears at the discriminator, noise is removed from the output, causing pin 54 of Q1002 to go high and signaling microprocessor Q1001 to activate the BUSY LED. The microprocessor then checks CTCSS chip Q1004 (AK2343) and DTMF decoder chip Q1007 (TC35305F) for CTCSS or DTMF code squelch information, respectively. If not transmitting and tone squelch is not activated, or if the received tone matches that programmed, the microprocessor stops scanning, if active, and allows audio to pass through muting and amplifier IC Q1023 (TDA7233D) to the loudspeaker.

VHF Single-Band Dual Receive

When VHF single-band dual receive operation is active, a portion of the received VHF RF passing through the antenna switching network (and applied to the VHF front end) is sampled through diodes D2006 on the 144 Mother Unit and D3007 on the 430 Mother Unit, the signals are band-pass filtered and amplified by Q3013 (2SC4226) before application to mixer Q3014 (2SC4215Y). This mixer also receives output from the 430-VCO Unit, after it is divided by four in Q3024 (µPB587G) on the 430-Mother Unit. The resulting 58.525-MHz sub-receiver 1st IF signal is applied to the UHF receiver IF chain before monolithic filter XF3001, and is then handled just as a UHF signal would be in UHF operation.

AF Output

On the CNTL Unit, detector audio from either the 144 or 430 Mother Unit is applied through analog switch Q1015-1 or -2 (¼ NJU4066BV) to remove the

CTCSS tone, if present, and adds keypad beeps and DTMF monitor tones as needed. The resulting audio is delivered through the respective volume control and audio selector Q1006 (MB87078PF) on the CNTL Unit, which selects VHF and UHF audio on the internal or external (EAR jack) loudspeakers, separate or mixed, through Q1018, Q1019 (2SC4617x2) and audio amplifier Q1023 (TDA7233D) on the CNTL Unit.

UHF Reception

UHF signals passed by the duplexer are applied to a varactor-tuned band-pass filter consisting of L3029, TC3005 and D3021/D3025 before RF amplification by Q3039 (2SC4228). The amplified RF is then band-pass filtered again by varactor-tuned resonators TC3004, L3028, D3020, D3024 and TC3003, L3027, D3019, D3023, further amplified by Q3038 (2SC4228) and filtered once more by TC3002, L3026, D3018 and D3022 to ensure pure in-band input to 1st mixer Q3035 (2SC4226). Tuning voltage for the varactors is provided by UHF PLL Q3009, buffered by Q3015 (2SK880GR).

Buffered output between 371.475 ~ 391.475-MHz from the 430-VCO Unit is amplified by Q3003 (2SC4245) and applied to the 1st mixer. The resulting 58.525-MHz 1st mixer product is passed through monolithic crystal filter XF3001(± 7.5-kHz BW) to strip away all but the desired signal, which is then amplified by Q3034 (2SC4215Y) before delivery to FM IF subsystem IC Q3037 (MC3372VM), which contains the 2nd mixer, 2nd local oscillator, limiter amplifier, noise amplifier, S-meter amplifier and squelch gates.

A 2nd local signal is generated from 58.07-MHz crystal X3002, which produces the 455-kHz 2nd IF when mixed with the 1st IF signal within Q3037. The 2nd IF is passed through ceramic filter CF3001 to strip away unwanted mixer products, and is then applied to the limiter amp in Q3037, which removes amplitude variations in the 455-kHz IF before detection of the speech by ceramic discriminator CD3001.

Detected audio from pin 9 of Q3037 is delivered via the 430 Mother Unit, CONTACT Unit and CNTL Unit (for sampling by CTCSS & DTMF detectors and de-emphasis). Receiver audio amplification is as already described.

UHF Squelch Control

When no carrier is received, noise at the output of the detector stage in Q3037 is amplified and band-pass filtered by the noise amp section of Q3037 and the network between pins 9 and 10, and then rectified by D3014. The resulting DC squelch control voltage is passed to pin 98 of main CPU Q1002. While no carrier is received, pin 55 of Q1002 remains low, signaling pin 7 of sub-CPU Q1001 on the Control Unit to keep the green (Busy) half of the UHF LED off, and holding the AF MUTE U line low to block UHF receiver audio from passing through analog gate Q1015-2 while no signal is being received, as well as during transmission.

When a carrier appears at the discriminator, noise is removed from the output, causing pin 55 of Q1002 to go high and signaling microprocessor Q1001 to activate the BUSY LED. The microprocessor then checks CTCSS chip Q1004 (AK2343) and DTMF decoder chip Q1007 (TC35305F) for CTCSS or DTMF code squelch information, respectively. If not transmitting and tone squelch is not activated, or if the received tone matches that programmed, the microprocessor stops scanning, if active, and allows audio to pass through mute and amplifier IC Q1023 (TDA7233D) to the loudspeaker.

UHF Single-Band Dual Receive

When UHF single-band dual receive operation is active, a portion of the received UHF RF passing through the antenna switching network (and applied to the UHF front end) is sampled via diode D2008 on the 144-Mother Unit and diode D3026 on the 430-Mother Unit. Here, the signals are band-pass filtered and amplified by Q2017 and Q2018 (both 2SC4227) before application to mixer Q2016 (2SC4537). This mixer also receives the third harmonic of the 144-VCO Unit. The resulting 45.05-MHz sub-receiver 1st IF signal is applied to the VHF receiver IF chain just before monolithic filter XF2001, and is then handled just as a VHF signal would be in VHF operation.

Transmitter Audio Stages

Speech input from the microphone is delivered to Q1006 (MB87078PF) for pre-emphasis then passes through the splatter filter section within Q1004 and Q1006 (MB87078PF) for IDC (instantaneous deviation control) before delivery to the modulator.

If Tone Burst or DTMF is enabled for transmission, the tone is generated by main CPU Q1002, buffered by Q1004 and applied to the IDC stage in place of speech audio. Also, the tone is amplified for monitoring in the loudspeaker, as mentioned before. The sub-CPU closes Mic Mute gate Q1004 when transmitting a tone, or when transmission is disabled.

The modulating audio is delivered first to the Control Unit, where it may pick up a generated CTCSS tone, then is next delivered to both Mother Units, where it is either disabled (on the receiving band) by Q2003 (VHF) or Q23004 (UHF, both DTC142EE), or delivered to modulating varactors D5003 (in the UHF VCO) or D4003 (in the VHF VCO), frequency modulating the PLL carrier up to ± 5 kHz from the unmodulated carrier at the transmitting frequency.

Late VHF Transmit Stages

On the 144 VCO Unit, the modulated signal from VHF VCO Q4001 (2SC4226) is buffered by Q4002 and Q4003 (both 2SC4226) and returned to the 144 Mother Unit for amplification by Q2002 (2SC4537), and then final amplification by VHF PA module Q2001 (S-AV28) on the 144 Mother Unit. The transmit signal then passes through antenna t/r switch D2003 before returning to the duplexer network on the 144 Mother Unit and then a low-pass filter consisting of L2002, L3003, C2017, C2018, C2012 and the duplexer consisting of C2019 (mounted on the 144 Mother Unit) and L3010, C3034, C3165 and the LPF (L3004, L3005, C3027, C3028, C3014) mounted on the 430 Mother Unit, before delivery to the antenna.

VHF Automatic Transmit Power Control (APC)

RF power output from the VHF final amplifier is sampled and rectified by D2001 (1SS321). The resulting DC is fed back through Q2004 (2SA1586) and Q2008 (2SC4617)to driver Q2002 (2SC4537) on the 144 Mother Unit, controlling the level of drive to the PA module, and thus the power output. The microprocessor selects either high or one of four low power levels via Q2011 (XP1401).

When the VHF transmitter PLL is unlocked, or while receiving, the unlock signal from Q2007 causes the ULT3V line to be dropped via Q2006 (DTA124EE), and Q2013 (DTC124EE), which disables transmission by biasing final amplifier Q2001 off and opening VHF t/r switch D2003.

VHF Transmit/Receive Switching

Closing the PTT switch on the Key Unit pulls one side of the microphone low, which turns on Q1010 (DTA144EE), causing pin 95 of microprocessor Q1002 on the Control Unit to go high. The microprocessor then delivers appropriate serial data to sub-CPU Q1001 to raise the TXV line to the 144 Mother Unit (via the Contact Unit) where Q2020 (UMB10) turns off the receiver, and Q2023 (DTC144EE) and Q2015 (DTA123EE) turn on the transmitter. This tx signal is delivered to the 144 Mother Unit where it causes the ULT3V line to go high, which in turn biases the VHF PA module on and closes t/r switch D2003 on the 144 Mother Unit. At the same time, Q2005 on the 144 Mother Unit turns on Q2002 on the 144 Mother Unit to drive the PA module.

Late UHF Transmit Stages

On the 430 VCO Unit, the modulated signal from UHF VCO Q5001 (2SC5006) is buffered by Q5003 and Q5002 (2SC5006) and returned to the 430 Mother Unit for amplification by Q3003 (2SC4245), and then final amplification by UHF PA module Q3002 (M67799MA) on the 430 Mother Unit. The transmit signal then passes through antenna t/r switch D3003 before returning to the duplexer network and the high-pass filter consisting of L3003~3005, C3021, C3022, C3014, C3027~3028, C3165 and the high-pass filter consisting of L3009, L3012, C3010, C3011, C3020 and C3029, mounted on the 430 Mother Unit before delivery to the antenna.

UHF Automatic Transmit Power Control (APC)

RF power output from the UHF final amplifier is sampled and rectified by D3001 (1SS321). The resulting DC is fed back through Q3005 (A1586Y) and Q3008 (2SC4617) to driver Q3001 (2SC4537) and Q3003 (2SC4245) on the 430 Mother Unit, controlling the level of drive to the PA module, and thus the power output. The microprocessor selects either high or one of four low power levels via Q3011 (XP1401).

When the UHF PLL is unlocked, or while receiving, the unlock signal causes the ULT3U line to be dropped via Q3007 (DTA144EE), and Q3012 (DTC124EE), which disables the transmitter by biasing final amplifier Q3002 off and opening UHF t/r switch D3003.

UHF Transmit/Receive Switching

As for UHF, closing the PTT line raises the TXU line via Q1010 and Q1002 on the Control Unit. This line connects to the 430 Mother Unit (via the Contact Unit) where Q3026 (UMB10N) turns off the receiver, and Q3017 (XP4213) and Q3022 (UMB10N) turn on the transmitter. This tx signal is delivered to the 430 Mother Unit where it causes the ULT3U line to go high, which in turn biases the UHF PA module on and closes t/r switch D3003 on the 430 Mother Unit. At the same time, Q3004 on the 430 Mother Unit turns on Q3003, Q3001 on the 430 Mother Unit to drive the PA module.

VHF PLL Frequency Synthesizer

The VHF PLL circuitry consists of VCO Q4001 and VCO buffer Q4003 (both 2SC4226) on the 144 VCO Unit; PLL subsystem IC Q2007 (FQ7925) on the 144 Mother Unit, and 12.8-MHz reference oscillator X3001/Q3009 on the 430 Mother Unit. Q2007 contains a prescaler, reference divider, serial-to-parallel data latch, programmable divider, phase comparator, charge pump, band selector and a power saver circuit.

While receiving, VCO Q4001 oscillates between 189.05 and 199.05 MHz according to the transceiver version and the programmed receiving frequency. The VCO output is buffered by Q4003 and returned to the 144 Mother Unit, where a sample of that output is applied to the prescaler section of Q2007. There the VCO signal is divided by 64 or 65, according to a control signal from the data latch section of Q2007, before being applied to the programmable divider section of Q2007.

The data latch section of Q2007 also receives serial dividing data from sub-cpu Q1001 on the Control Unit, which causes the pre-divided VCO signal to be further divided in the programmable divider section, depending upon the desired receive frequency, so as to produce a 5-kHz or 6.25-kHz derivative of the current VCO frequency. Meanwhile, the reference divider section of Q2007 divides the 12.8-MHz crystal reference from the 430 Mother Unit, after buffering by Q3036 (2SC4617), by 2560 (or 2048) to produce the 5-kHz (or 6.25-kHz) loop reference (respectively).

The 5-kHz (or 6.25-kHz) signal from the programmable divider (derived from the VCO) and that derived from the reference oscillator are applied to the phase detector section of Q2007, which produces a pulsed output with pulse duration depending on the phase difference between the input signals. This pulse train is filtered to DC and returned to varactor D4001 on the 144 VCO Unit.

Changes in the level of the DC voltage applied to the varactors affect the reactance in the tank circuit of the VCO, changing the oscillating frequency of the VCO according to the phase difference between the signals derived from the VCO and the crystal reference oscillator. The VCO is thus phase-locked to the crystal reference oscillator.

The output of VCO Q4001, after buffering by Q4002 and Q4003, is delivered to the 144 Mother Unit for amplification by Q2002 before application to the 1st mixer, as described previously.

For VHF transmission, VCO Q4001 oscillates between 140 and 150 MHz according to the model version and programmed transmit frequency. The remainder of the PLL circuitry is shared with the receiver. However, the dividing data from the microprocessor is such that the VCO frequency is at the actual transmit frequency (rather than offset for IFs, as in the receiving case). Also, the VCO is modulated by the speech audio applied to D4003, as described previously. Receive and transmit buses select which VCO is made active by Q4004 (DTC143ZE). FET Q2014 (2SK880GR) on the 144 Mother Unit buffers the VCV line for application to the tracking band-pass filters in the receiver front end.

When the power saving feature is active, the microprocessor periodically signals the PLL IC to conserve power and shorten lock-up time.

UHF PLL Frequency Synthesizer

The UHF PLL circuitry consists of VCO Q5001 and VCO buffers Q5002 and Q5003 (all 2SC5006) on the 430 VCO Unit, and PLL subsystem IC Q3009 (FQ7925) and 12.8-MHz reference oscillator X3001 on the 430 Mother Unit. Q3009 contains a prescaler, reference divider, serial-to-parallel data latch, programmable divider, phase comparator, band selector and a power saver circuit.

For receiving, VCO Q5001 oscillates between 488.525 and 508.525 MHz according to model version and the programmed receiving frequency. A portion of the VCO output is buffered by Q5003 and returned to the prescaler section of Q3009 on the 430 Mother Unit. There the VCO signal is divided by 64 or 65, according to a control signal from the data latch section of Q3009, before being applied to the programmable divider section of Q3009.

The data latch section of Q3009 also receives serial dividing data from sub-cpu Q1001 on the Control Unit, which causes the pre-divided VCO signal to be further divided in the programmable divider section, depending upon the desired receive frequency, so as to produce a 5-kHz or 6.25-kHz derivative of the current VCO frequency. Meanwhile, the reference divider section of Q3009 divides the 12.8-MHz crystal reference by 2560 (or 2048) to produce the 5-kHz (or 6.25-kHz) loop reference (respectively).

The 5-kHz (or 6.25-kHz) signal from the programmable divider (derived from the VCO) and that derived from the reference oscillator are applied to the phase detector section of Q3009, which produces a dual pulsed output with pulse duration depending on the phase difference between the input signals.

This pulse train is filtered to DC and returned to varactor D5001 on the 430 VCO Unit.

Changes in the level of the DC voltage applied to the varactors affect the reactance in the tank circuit of the VCO, changing the oscillating frequency of the VCO according to the phase difference between the signals derived from the VCO and the crystal reference oscillator. The VCO is thus phase-locked to the crystal reference oscillator.

The output of VCO Q5001 is also buffered by Q5002 & Q5003 and is then delivered to the 430 Mother Unit for amplification by Q3003 before application to the 1st mixer, as described previously.

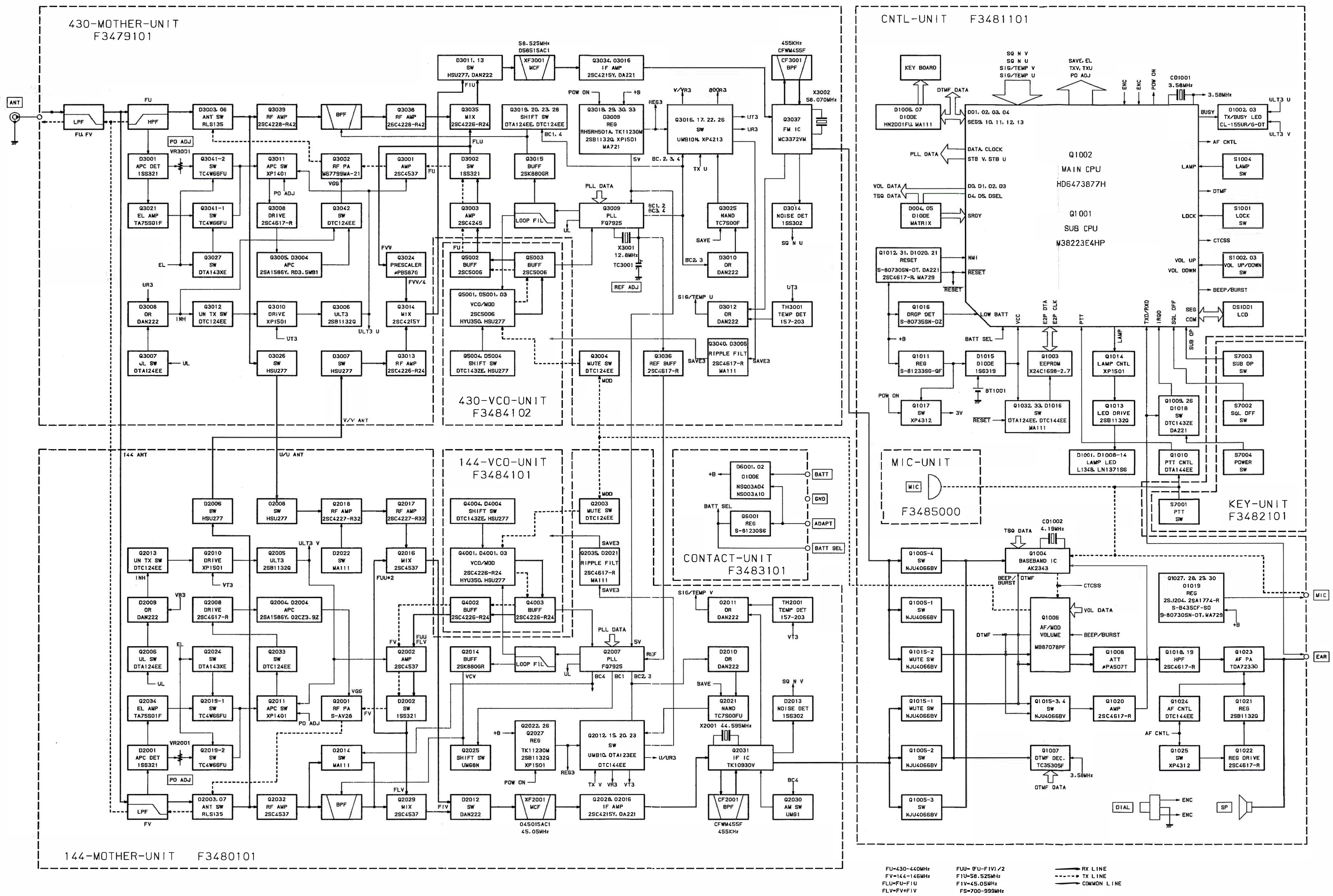
For UHF transmission, VCO Q5001 oscillates between 430 and 450 MHz according to the model version and programmed transmit frequency. The remainder of the PLL circuitry is shared with the receiver. However, the dividing data from the microprocessor is such that the VCO frequency is at the actual transmit frequency (rather than offset for IFs, as in the receiving case). Also, for transmission, the VCO is modulated by the filtered speech audio applied to the tank circuit at D5003, as described previously. Receive and transmit buses select which VCO is to be active by Q5004 (DTC143ZE), respectively. FET Q3015 (2SK880GR) on the 430 Mother Unit buffers the VCV line for application to the tracking band-pass filters in the receiver front end.

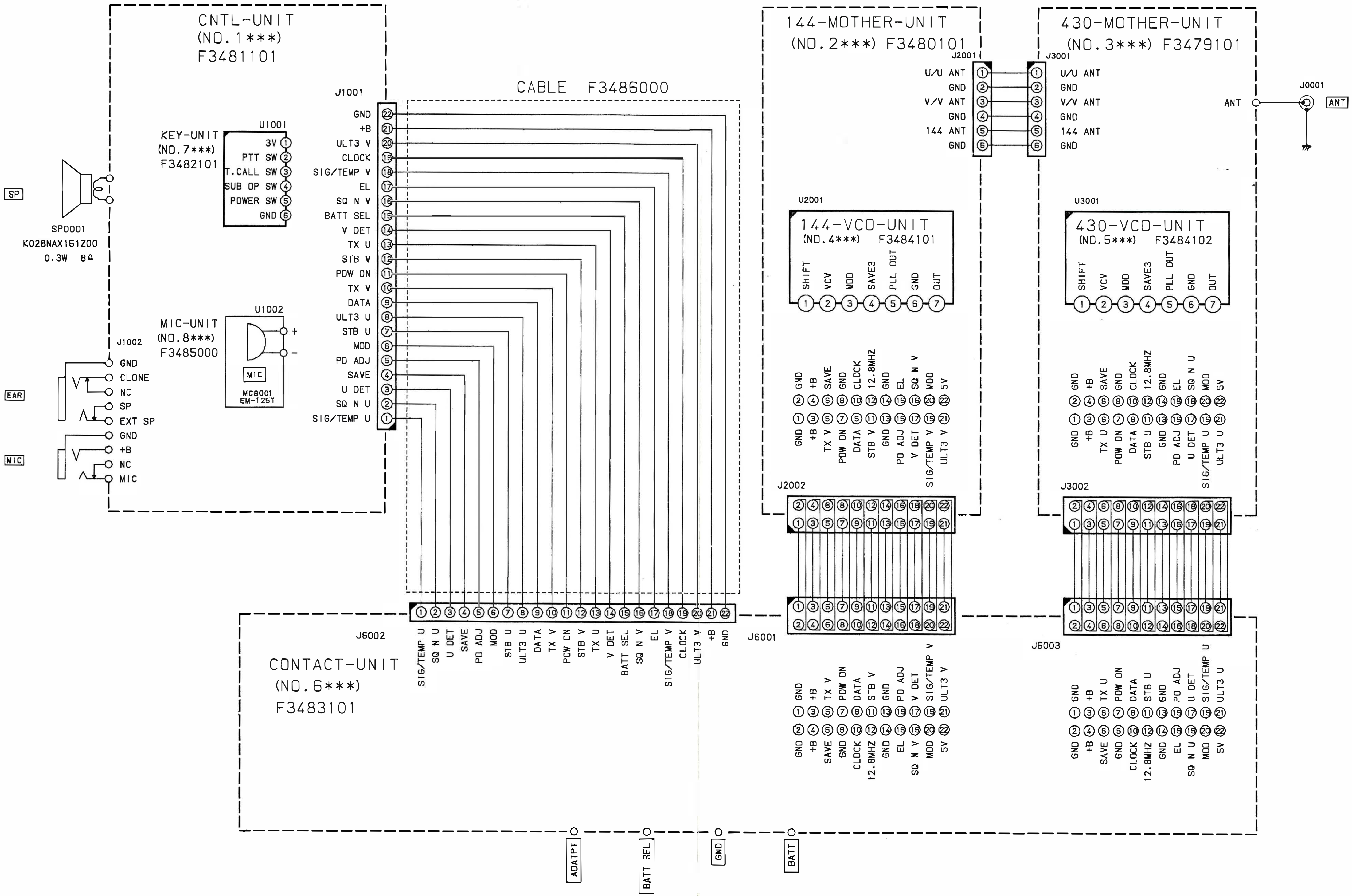
When the power saving feature is active, the microprocessor periodically signals the PLL IC to conserve power and shorten lock-up time.

Power-On Sequencing

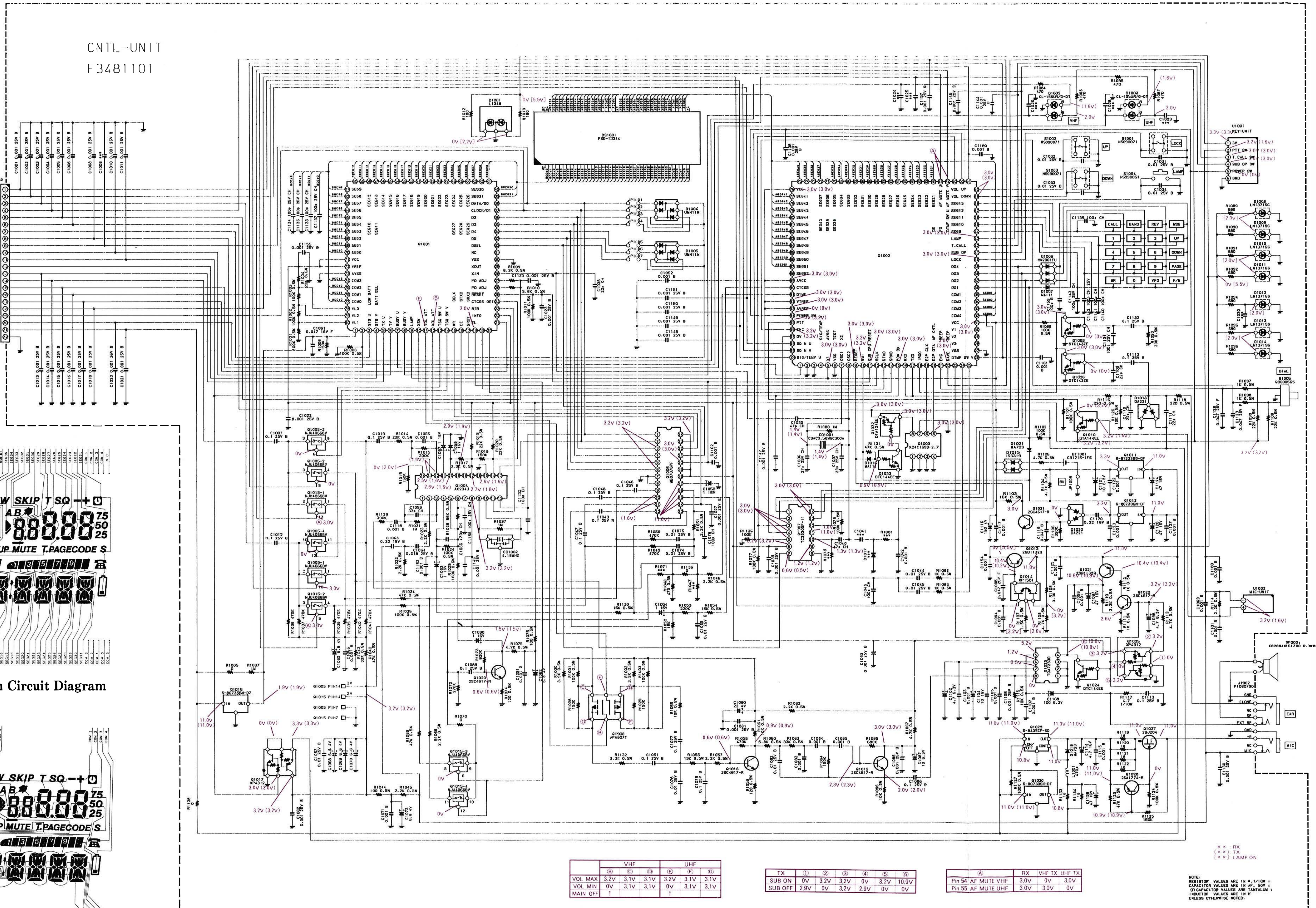
Pressing the orange POWER switch applies 3 volts to POWER SW pin 94 of microprocessor Q1002 to wake it up. This provides 3 volts via Q1017 (XP4312) on the Control Unit. At the same time, Q1002 provides 3 V via regulator IC Q2022 and Q2023 (both TK11230M) on the 144 and 430 Mother Units.

Notes


430-MOTHER-UNIT F3479101
430-VCO-UNIT F3484102
144-VCO-UNIT F3484101
144-MOTHER-UNIT F3480101
CNTL-UNIT F3481101
MIC-UNIT F3485000
CONTACT-UNIT F3483101
KEY-UNIT F3482101
Q1002 MAIN CPU HD6473877H
Q1001 SUB CPU M38223E4HP
FU=430-440MHz
FV=144-146MHz
FLU=FU-F1U
FLV=FV+F1V
FVV=(FV-F1U)*4
FUU=(FU-F1V)/2
F1U=58.525MHz
F1V=45.05MHz
FS=700-999MHz
FLS=FS-F1U
RX LINE
TX LINE
COMMON LINE


CNTL-UNIT
(NO. 1***)
F3481101
CABLE F3486000
144-MOTHER-UNIT
(NO. 2***) F3480101
430-MOTHER-UNIT
(NO. 3***) F3479101
KEY-UNIT
(NO. 7***)
F3482101
U1001
3V
PTT SW
T.CALL SW
SUB OP SW
POWER SW
GND
SP
SP0001
K028NAX161Z00
0.3W 8Ω
MIC-UNIT
(NO. 8***)
F3485000
U1002
MIC
MC8001
EM-125T
J1001
GND
+B
ULT3 V
CLOCK
SIG/TEMP V
EL
SQ N V
BATT SEL
V DET
TX U
STB V
POW ON
TX V
DATA
ULT3 U
STB U
MOD
PO ADJ
SAVE
U DET
SQ N U
SIG/TEMP U
J1002
GND
CLONE
NC
SP
EXT SP
GND
+B
NC
MIC
EAR
MIC
J2001
U/U ANT
GND
V/V ANT
GND
144 ANT
GND
J3001
J0001
ANT
U2001
144-VCO-UNIT
(NO. 4***) F3484101
SHIFT
VCV
MOD
SAVE3
PLL OUT
GND
OUT
U3001
430-VCO-UNIT
(NO. 5***) F3484102
J2002
J3002
12.8MHZ
J6002
J6001
J6003
CONTACT-UNIT
(NO. 6***)
F3483101
ADATPT
BATT SEL
GND
BATT

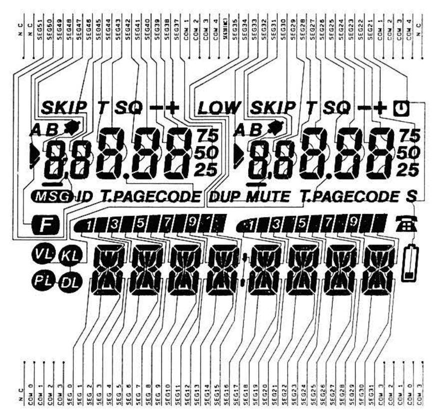
Circuit Diagram



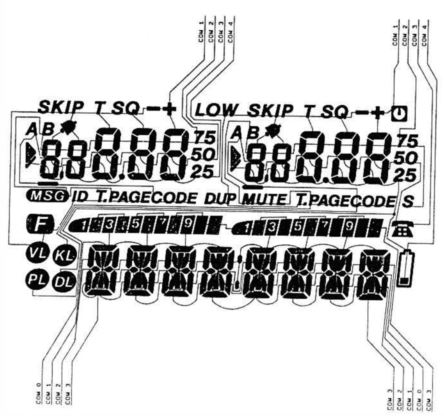
	VHF			UHF		
	Ⓑ	Ⓒ	Ⓓ	Ⓔ	Ⓕ	Ⓖ
VOL MAX	3.2V	3.1V	3.1V	3.2V	3.1V	3.1V
VOL MIN	0V	3.1V	3.1V	0V	3.1V	3.1V
MAIN OFF	↑			↑		

TX	①	②	③	④	⑤	⑥
SUB ON	0V	3.2V	3.2V	0V	3.2V	10.9V
SUB OFF	2.9V	0V	3.2V	2.9V	0V	0V

Ⓐ	RX	VHF TX	UHF TX
Pin 54 AF MUTE VHF	3.0V	0V	3.0V
Pin 55 AF MUTE UHF	3.0V	3.0V	0V

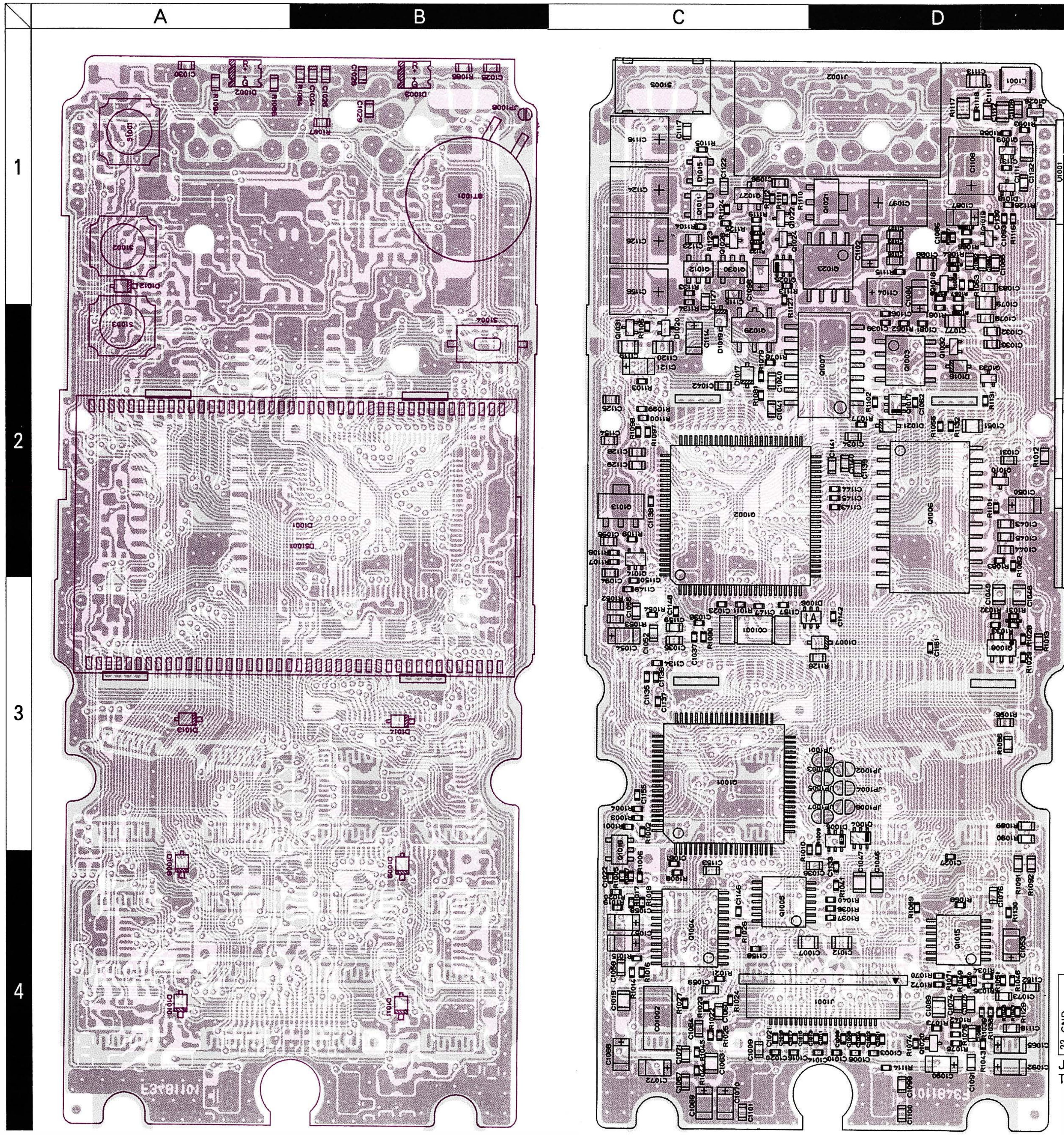


LCD Segmentation Circuit Diagram



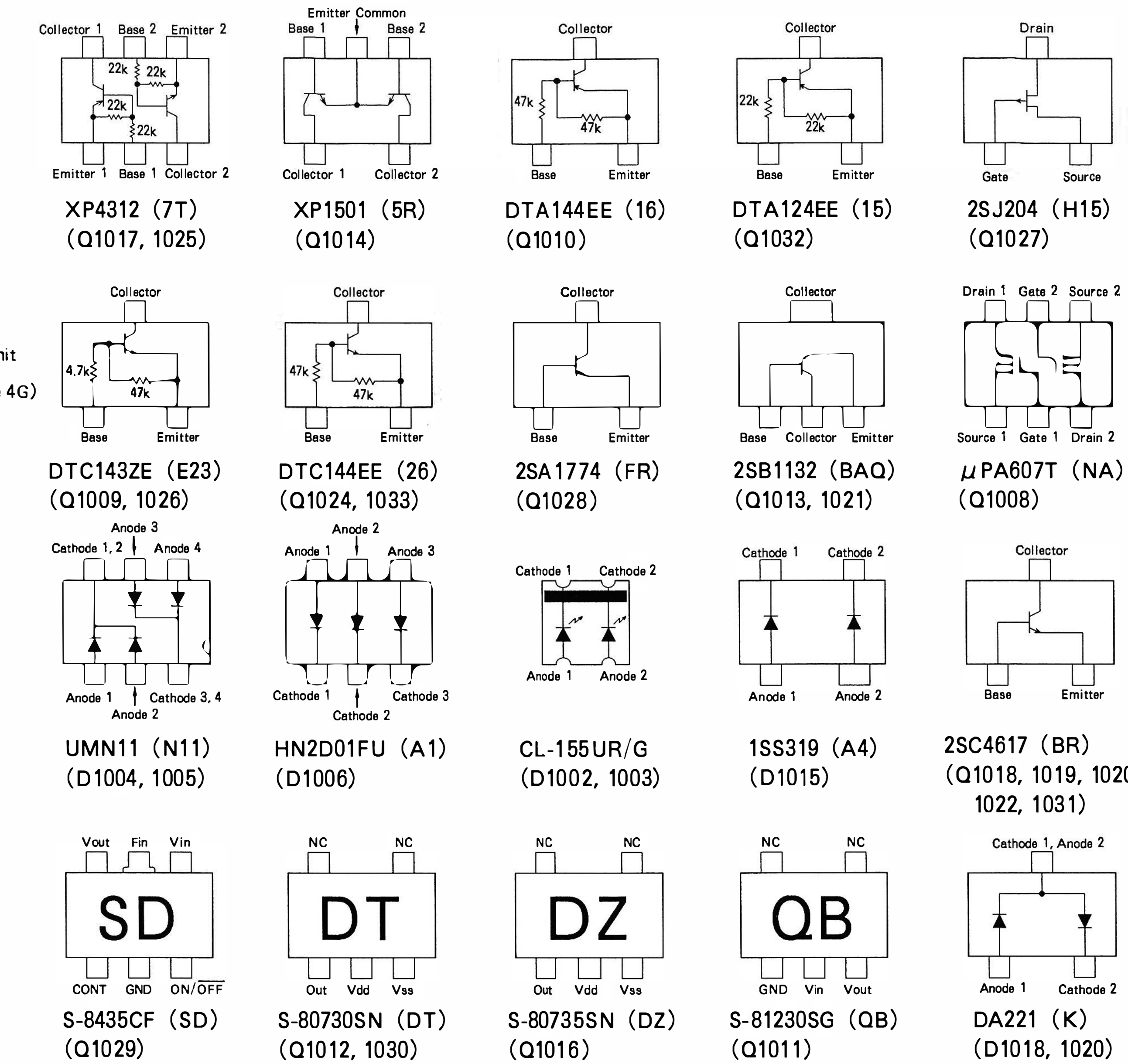
LCD Backplane Circuit Diagram

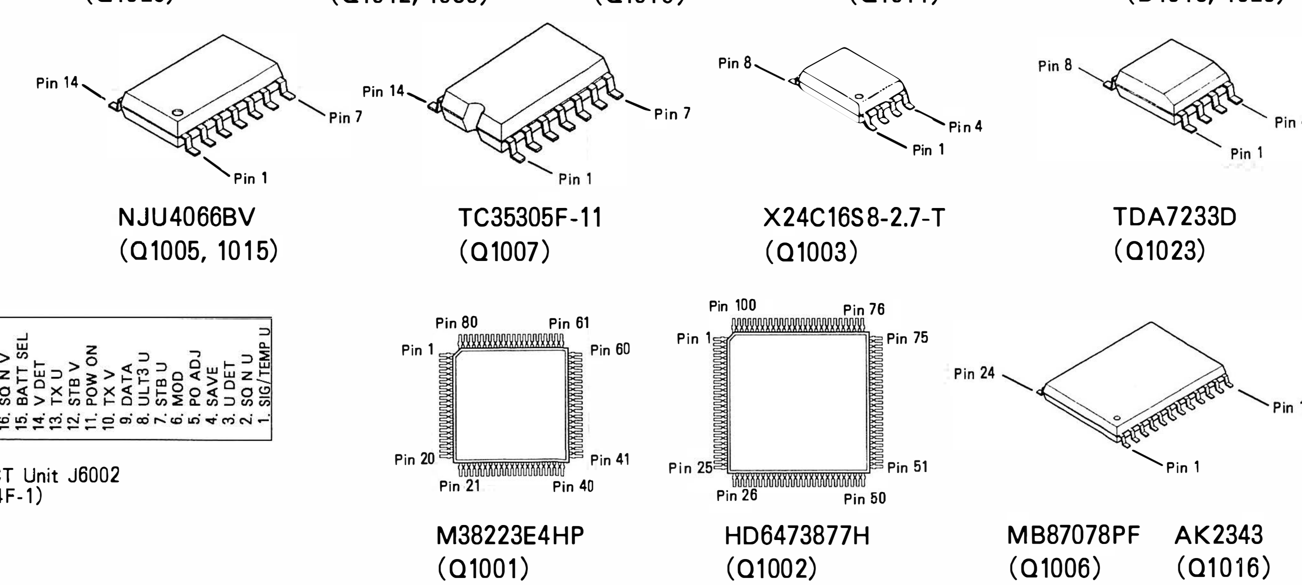
Parts Layout



obverse view of display side

obverse view of component side





Parts List

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
	*** CNTL UNIT ***								
	PCB With Components (W/ KEY,MIC UNIT)					CS1416002	TYP A1		
	PCB With Components (W/ KEY,MIC UNIT)					CS1416003	TYP A2		
	PCB With Components (W/ KEY,MIC UNIT)					CS1416004	TYP A3		
	PCB With Components (W/ KEY,MIC UNIT)					CS1416005	TYP B1		
	PCB With Components (W/ KEY,MIC UNIT)					CS1416006	TYP B2		
	PCB With Components (W/ KEY,MIC UNIT)					CS1416007	TYP B3		
	PCB With Components (W/ KEY,MIC UNIT)					CS1416008	TYP C1		
	PCB With Components (W/ KEY,MIC UNIT)					CS1416009	TYP C2		
	PCB With Components (W/ KEY,MIC UNIT)					CS1416010	TYP C3		
	PCB With Components (W/ KEY,MIC UNIT)					CS1416011	TYP D1		
	PCB With Components (W/ KEY,MIC UNIT)					CS1416012	TYP D2		
	Printed Circuit Board					F3481101			
BT1001	LITHIUM BATTERY				CR1216-1F6	Q9000627			
C 1001	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1002	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1003	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1004	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1005	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1006	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1007	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 1008	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1010	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1011	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1012	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 1013	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1014	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1015	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1016	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1017	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1018	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1019	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 1020	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1021	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1022	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1023	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1027	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1031	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802			
C 1032	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802			
C 1033	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802			
C 1034	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802			
C 1035	CHIP CAP.	47pF	50V	CH	GRM39CH470J50PT	K22174227			
C 1036	CHIP CAP.	27pF	25V	CH	TMK105CH270J-F	K22148224			
C 1037	CHIP CAP.	39pF	25V	CH	TMK105CH390J-F	K22148228			
C 1038	CHIP CAP.	22pF	50V	CH	GRM39CH220J50PT	K22174219			

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
C 1039	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1040	CHIP CAP.	47pF	50V	CH	GRM39CH470J50PT	K22174227			
C 1042	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1043	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235			
C 1044	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802			
C 1045	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802			
C 1046	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 1047	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 1048	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 1049	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 1050	TANTALUM CHIP CAP.	1uF	16V		TESVA1C105M1-8R	K78120009			
C 1051	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 1052	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1053	TANTALUM CHIP CAP.	1uF	16V		TEMSVA21C105M-8R	K78120024			
C 1054	TANTALUM CHIP CAP.	1uF	16V		TESVA1C105M1-8R	K78120009			
C 1055	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802			
C 1056	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1057	TANTALUM CHIP CAP.	1uF	16V		TEMSVA21C105M-8R	K78120024			
C 1058	TANTALUM CHIP CAP.	1uF	16V		TEMSVA21C105M-8R	K78120024			
C 1059	CHIP CAP.	33pF	50V	CH	GRM39CH330J50PT	K22174223			
C 1060	CHIP CAP.	470pF	50V	CH	GRM39CH471J50PT	K22174249			
C 1061	CHIP CAP.	0.047uF	16V	F	EMK105F473Z-F	K22129002			
C 1062	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1063	CHIP CAP.	0.22uF	16V	B	GRM40B224M16PT	K22120806			
C 1064	CHIP CAP.	0.018uF	25V	B	GRM39B183K25PT	K22144806			
C 1065	TANTALUM CHIP CAP.	6.8uF	4V		TEMSVA20G685M-8R	K78060022			
C 1066	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1067	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802			
C 1068	TANTALUM CHIP CAP.	6.8uF	4V		TEMSVA20G685M-8R	K78060022			
C 1069	TANTALUM CHIP CAP.	6.8uF	4V		TEMSVA20G685M-8R	K78060022			
C 1070	TANTALUM CHIP CAP.	6.8uF	4V		TEMSVA20G685M-8R	K78060022			
C 1071	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1072	TANTALUM CHIP CAP.	6.8uF	4V		TEMSVA20G685M-8R	K78060022			
C 1074	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802			
C 1075	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802			
C 1076	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235			
C 1077	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 1078	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802			
C 1079	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 1080	TANTALUM CHIP CAP.	22uF	4V		TEMSVA0G226M-8R	K78060023			
C 1081	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1082	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802			
C 1083	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1084	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1085	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1086	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1087	TANTALUM CHIP CAP.	10uF	6.3V		TEMSVA0J106M-8R	K78080027			
C 1088	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 1089	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
C 1090	TANTALUM CHIP CAP.	1uF	16V		TEMSVA21C105M-8R	K78120024			
C 1091	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1092	TANTALUM CHIP CAP.	6.8uF	4V		TEMSVA20G685M-8R	K78060022			
C 1093	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1094	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1095	CHIP CAP.	0.047uF	25V	F	GRM39F473Z25PT	K22145002			
C 1096	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1097	TANTALUM CHIP CAP.	47uF	16V		TEMSVD21C476M12R	K78120027			
C 1098	TANTALUM CHIP CAP.	4.7uF	6.3V		TEMSVA0J475M-8R	K78080017			
C 1099	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1100	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1101	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1102	TANTALUM CHIP CAP.	4.7uF	6.3V		TEMSVA0J475M-8R	K78080017			
C 1103	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1104	TANTALUM CHIP CAP.	10uF	16V		TEMSVB21C106M-8R	K78120025			
C 1105	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1106	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1107	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1108	TANTALUM CHIP CAP.	100uF	6.3V		TEMSVD20J107M12R	K78080033			
C 1109	CHIP CAP.	22pF	50V	CH	GRM39CH220J50PT	K22174219			
C 1110	CHIP CAP.	22pF	50V	CH	GRM39CH220J50PT	K22174219			
C 1111	CHIP CAP.	22pF	50V	CH	GRM39CH220J50PT	K22174219			
C 1112	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 1113	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 1114	TANTALUM CHIP CAP.	4.7uF	16V		TEMSVA1C475M-8R	K78120031			
C 1115	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1116	TANTALUM CHIP CAP.	150uF	4V		TEMSVD20G157M12R	K78060018			
C 1117	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1118	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1119	CHIP CAP.	0.047uF	50V	B	GRM40B473M50PT	K22170823			
C 1120	CHIP CAP.	0.22uF	16V	B	GRM40B224M16PT	K22120806			
C 1121	TANTALUM CHIP CAP.	10uF	6.3V		TEMSVA0J106M-8R	K78080027			
C 1122	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1123	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1124	TANTALUM CHIP CAP.	47uF	16V		TEMSVD21C476M12R	K78120027			
C 1125	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1126	TANTALUM CHIP CAP.	47uF	16V		TEMSVD21C476M12R	K78120027			
C 1127	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1128	CHIP CAP.	0.047uF	25V	F	GRM39F473Z25PT	K22145002			
C 1129	CHIP CAP.	0.047uF	25V	F	GRM39F473Z25PT	K22145002			
C 1130	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1131	CHIP CAP.	100pF	25V	CH	TMK105CH101J-F	K22148238			
C 1132	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 1133	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1134	CHIP CAP.	100pF	25V	CH	TMK105CH101J-F	K22148238			
C 1135	CHIP CAP.	100pF	25V	CH	TMK105CH101J-F	K22148238			
C 1136	CHIP CAP.	100pF	25V	CH	TMK105CH101J-F	K22148238			
C 1137	CHIP CAP.	100pF	25V	CH	TMK105CH101J-F	K22148238			
C 1138	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
C 1139	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235			
C 1140	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235			
C 1141	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235			
C 1142	CHIP CAP.	100pF	25V	CH	TMK105CH101J-F	K22148238			
C 1143	CHIP CAP.	100pF	25V	CH	TMK105CH101J-F	K22148238			
C 1144	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1145	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1146	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1147	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1148	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1149	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1150	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1151	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1152	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1153	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235			
C 1154	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1155	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1156	TANTALUM CHIP CAP.	47uF	16V		TEMSVD21C476M12R	K78120027			
C 1157	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1158	CHIP CAP.	100pF	25V	CH	TMK105CH101J-F	K22148238			
C 1159	CHIP CAP.	100pF	25V	CH	TMK105CH101J-F	K22148238			
C 1160	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1161	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 1162	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
CO1001	CERAMIC OSC				CSAC3.58MGC300A-TC	H7900790			
CO1002	CERAMIC OSC				CSTCS4.19MG-TC	H7901010			
D 1001	LED				L1348	G2090596			
D 1002	LED				CL-155UR/G-D-T	G2070278			
D 1003	LED				CL-155UR/G-D-T	G2070278			
D 1004	DIODE				UMN11 TN	G2070198			
D 1005	DIODE				UMN11 TN	G2070198			
D 1006	DIODE				HN2D01FUTE85R	G2070348			
D 1007	DIODE				MA111-(TX)	G2070338			
D 1008	LED				LN1371SG-(TRP)	G2070386			
D 1009	LED				LN1371SG-(TRP)	G2070386			
D 1010	LED				LN1371SG-(TRP)	G2070386			
D 1011	LED				LN1371SG-(TRP)	G2070386			
D 1012	LED				LN1371SG-(TRP)	G2070386			
D 1013	LED				LN1371SG-(TRP)	G2070386			
D 1014	LED				LN1371SG-(TRP)	G2070386			
D 1015	DIODE				1SS319 TE85R	G2070080			
D 1016	DIODE				MA111-(TX)	G2070338			
D 1017									
D 1018	DIODE				DA221 TL	G2070178			
D 1019	DIODE				MA729-(TX)	G2070320			
D 1020	DIODE				DA221 TL	G2070178			
D 1021	DIODE				MA729-(TX)	G2070320			

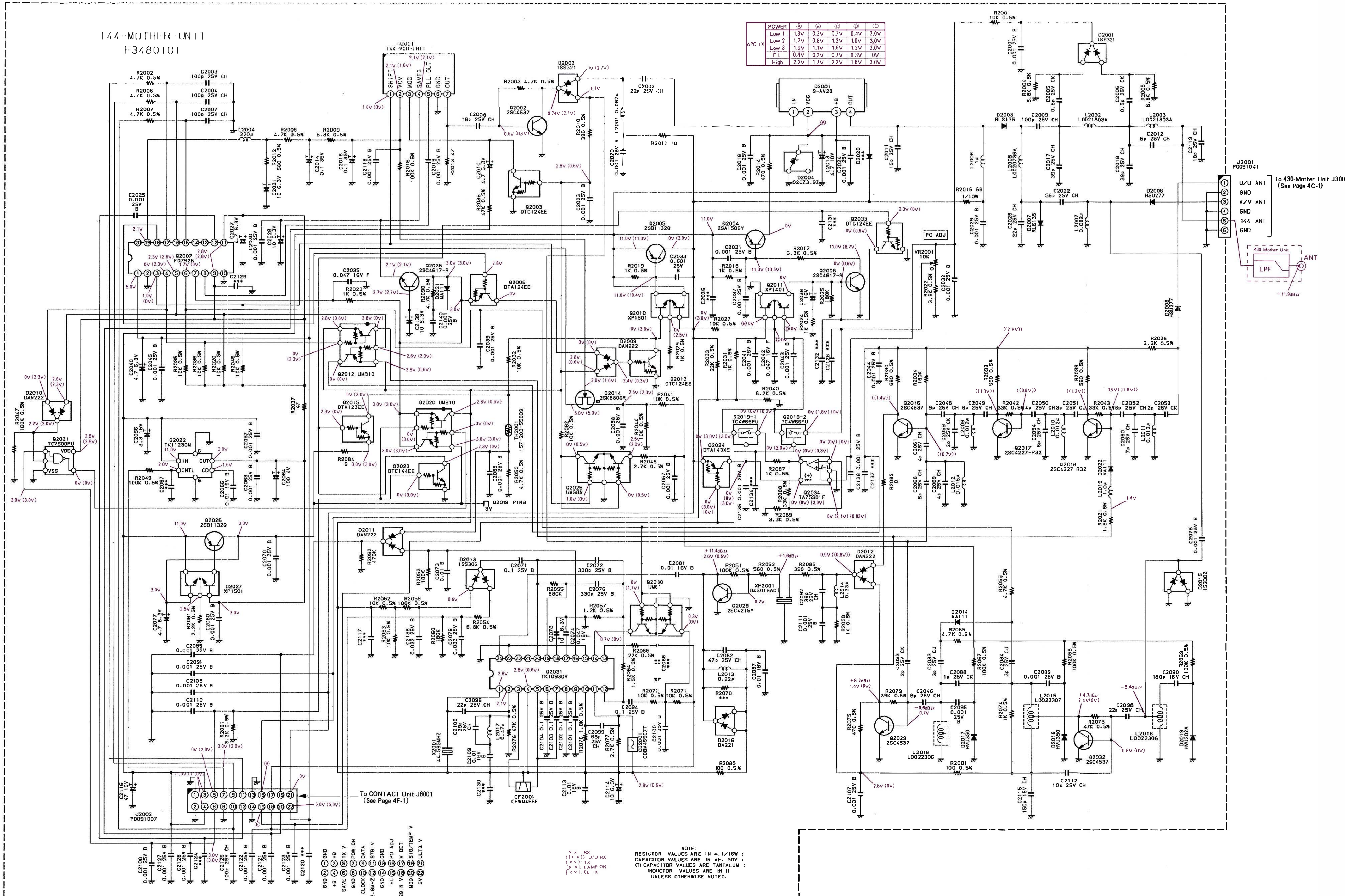
REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
DS1001	LCD				FSD-13344	G6090111			
J 1001	CONNECTOR				22FLZ-SM1-TB	P1090855			
J 1002	CONNECTOR				HSJ1468-01-010	P1090730			
L 1001	M.RFC	470uH			FLC32T-471J	L1690235			
Q 1001	IC				M38223M4-132HP	G1091982	DST USA		C-3
Q 1001	IC				M38223M4-132HP	G1091982	DST EXP		C-3
Q 1002	IC				HD6473877H R0027	G1091985			C-2
Q 1003	IC				X24C16S8-2.7-T	G1091831			D-2
Q 1004	IC				AK2343	G1091908			C-4
Q 1005	IC				NJU4066BV-TE1	G1091873			C-4
Q 1006	IC				MB87078PF-G-BND-ER	G1091773			D-2
Q 1007	IC				TC35305F-11 TP2	G1091177			D-2
Q 1008	FET				UPA607T-T1	G4070008			D-3
Q 1009	TRANSISTOR				DTC143ZE TL	G3070102			D-1
Q 1010	TRANSISTOR				DTA144EE TL	G3070074			D-2
Q 1011	IC				S-81233SG-QF-T1	G1091936			C-1
Q 1012	IC				S-80730SN-DT-T1	G1091875			C-1
Q 1013	TRANSISTOR				2SB1132 T100 Q	G3211327Q			C-2
Q 1014	TRANSISTOR				XP1501-(TX)	G3070143			C-2
Q 1015	IC				NJU4066BV-TE1	G1091873			D-4
Q 1016	IC				S-80735SN-DZ-T1	G1091876			C-3
Q 1017	TRANSISTOR				XP4312-(TX)	G3070141			D-2
Q 1018	TRANSISTOR				2SC4617 TL R	G3346178R			D-1
Q 1019	TRANSISTOR				2SC4617 TL R	G3346178R			D-1
Q 1020	TRANSISTOR				2SC4617 TL R	G3346178R			D-4
Q 1021	TRANSISTOR				2SB1132 T100 Q	G3211327Q			D-1
Q 1022	TRANSISTOR				2SC4617 TL R	G3346178R			C-1
Q 1023	IC				TDA7233D-TR	G1091112			D-1
Q 1024	TRANSISTOR				DTC144EE TL	G3070075			C-1
Q 1025	TRANSISTOR				XP4312-(TX)	G3070141			C-1
Q 1026	TRANSISTOR				DTC143ZE TL	G3070102			D-1
Q 1027	FET				2SJ204-T1B	G3702048			C-1
Q 1028	TRANSISTOR				2SA1774 TL R	G3117748R			C-1
Q 1029	IC				S-8435CF-SD-T1	G1091874			C-2
Q 1030	IC				S-80730SN-DT-T1	G1091875			C-1
Q 1031	TRANSISTOR				2SC4617 TL R	G3346178R			C-2
Q 1032	TRANSISTOR				DTA144EE TL	G3070074			D-2
Q 1033	TRANSISTOR				DTC124TE TL	G3070128			D-2
R 1001	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 1002	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 1003	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 1004	CHIP RES.	22K	1/16W	0.5%	RR0510R-223-D	J24189151			
R 1005	CHIP RES.	0	1/16W		RMC1/16S JPTH	J24189070			
R 1006	CHIP RES.	150K	1/16W	5%	RMC1/16S 154JTH	J24189051			

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
R 1007	CHIP RES.	1M	1/16W	5%	RMC1/16S 105JTH	J24189061			
R 1008	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 1009	CHIP RES.	8.2K	1/16W	0.5%	RR0510P-822-D	J24189141			
R 1010	CHIP RES.	5.6K	1/16W	0.5%	RR0510P-562-D	J24189137			
R 1011	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 1012	CHIP RES.	180	1/16W	5%	RMC1/16 181JATP	J24185181			
R 1013	CHIP RES.	180	1/16W	5%	RMC1/16 181JATP	J24185181			
R 1014	CHIP RES.	22K	1/16W	0.5%	RR0510R-223-D	J24189151			
R 1015	CHIP RES.	330K	1/16W	5%	RMC1/16S 334JTH	J24189055			
R 1016	CHIP RES.	150K	1/16W	5%	RMC1/16S 154JTH	J24189051			
R 1017	CHIP RES.	3.9K	1/16W	0.5%	RR0510P-392-D	J24189133			
R 1018	CHIP RES.	150K	1/16W	5%	RMC1/16S 154JTH	J24189051			
R 1019	CHIP RES.	22K	1/16W	0.5%	RR0510R-223-D	J24189151			
R 1020	CHIP RES.	22K	1/16W	0.5%	RR0510R-223-D	J24189151			
R 1021	CHIP RES.	1M	1/16W	5%	RMC1/16S 105JTH	J24189061			
R 1022	CHIP RES.	2.2K	1/16W	0.5%	RR0510P-222-D	J24189127			
R 1023	CHIP RES.	2.2K	1/16W	0.5%	RR0510P-222-D	J24189127			
R 1024	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 1025	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 1026	CHIP RES.	56K	1/16W	0.5%	RR0510R-563-D	J24189161			
R 1027	CHIP RES.	1M	1/16W	5%	RMC1/16S 105JTH	J24189061			
R 1028	CHIP RES.	150K	1/16W	5%	RMC1/16S 154JTH	J24189051			
R 1029	CHIP RES.	150K	1/16W	5%	RMC1/16S 154JTH	J24189051			
R 1030	CHIP RES.	3.9K	1/16W	0.5%	RR0510P-392-D	J24189133			
R 1031	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 1032	CHIP RES.	3.9K	1/16W	0.5%	RR0510P-392-D	J24189133			
R 1033	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 1034	CHIP RES.	47K	1/16W	0.5%	RR0510R-473-D	J24189159			
R 1035	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 1036	CHIP RES.	470K	1/16W	5%	RMC1/16S 474JTH	J24189057			
R 1037	CHIP RES.	470K	1/16W	5%	RMC1/16S 474JTH	J24189057			
R 1038	CHIP RES.	470K	1/16W	5%	RMC1/16S 474JTH	J24189057			
R 1039	CHIP RES.	470K	1/16W	5%	RMC1/16S 474JTH	J24189057			
R 1040	CHIP RES.	470K	1/16W	5%	RMC1/16S 474JTH	J24189057			
R 1041	CHIP RES.	470K	1/16W	5%	RMC1/16S 474JTH	J24189057			
R 1042	CHIP RES.	47K	1/16W	0.5%	RR0510R-473-D	J24189159			
R 1043	CHIP RES.	33K	1/16W	0.5%	RR0510R-333-D	J24189155			
R 1044	CHIP RES.	100	1/16W	0.5%	RR0510P-101-D	J24189095			
R 1045	CHIP RES.	2.2K	1/16W	0.5%	RR0510P-222-D	J24189127			
R 1046	CHIP RES.	2.2K	1/16W	0.5%	RR0510P-222-D	J24189127			
R 1048	CHIP RES.	470	1/16W	0.5%	RR0510P-471-D	J24189111			
R 1049	CHIP RES.	470K	1/16W	5%	RMC1/16S 474JTH	J24189057			
R 1050	CHIP RES.	470K	1/16W	5%	RMC1/16S 474JTH	J24189057			
R 1051	CHIP RES.	2.2K	1/16W	0.5%	RR0510P-222-D	J24189127			
R 1052	CHIP RES.	15K	1/16W	5%	RMC1/16 153JATP	J24185153			
R 1053	CHIP RES.	220K	1/16W	5%	RMC1/16 224JATP	J24185224			
R 1054	CHIP RES.	15K	1/16W	0.5%	RR0510R-153-D	J24189147			
R 1055	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 1056	CHIP RES.	15K	1/16W	0.5%	RR0510R-153-D	J24189147			

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
R 1057	CHIP RES.	2.2K	1/16W	0.5%	RR0510P-222-D	J24189127			
R 1058	CHIP RES.	470K	1/16W	5%	RMC1/16S 474JTH	J24189057			
R 1059	CHIP RES.	120	1/16W	0.5%	RR0510P-121-D	J24189097			
R 1060	CHIP RES.	6.8K	1/16W	0.5%	RR0510P-682-D	J24189139			
R 1061	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 1062	CHIP RES.	2.2K	1/16W	0.5%	RR0510P-222-D	J24189127			
R 1063	CHIP RES.	33K	1/16W	0.5%	RR0510R-333-D	J24189155			
R 1064	CHIP RES.	150K	1/16W	5%	RMC1/16S 154JTH	J24189051			
R 1065	CHIP RES.	680K	1/16W	5%	RMC1/16S 684JTH	J24189059			
R 1066	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 1067	CHIP RES.	4.7K	1/16W	0.5%	RR0510P-472-D	J24189135			
R 1068	CHIP RES.	2.2K	1/16W	0.5%	RR0510P-222-D	J24189127			
R 1069	CHIP RES.	47K	1/16W	0.5%	RR0510R-473-D	J24189159			
R 1070	CHIP RES.	0	1/16W		RMC1/16S JPTH	J24189070			
R 1072	CHIP RES.	270K	1/16W	5%	RMC1/16S 274JTH	J24189054			
R 1073	CHIP RES.	820K	1/16W	5%	RMC1/16S 824JTH	J24189060			
R 1074	CHIP RES.	120	1/16W	0.5%	RR0510P-121-D	J24189097			
R 1075	CHIP RES.	4.7K	1/16W	0.5%	RR0510P-472-D	J24189135			
R 1076	CHIP RES.	100	1/16W	0.5%	RR0510P-101-D	J24189095			
R 1077	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 1079	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 1080	CHIP RES.	1M	1/16W	5%	RMC1/16S 105JTH	J24189061			
R 1082	CHIP RES.	1K	1/16W	0.5%	RR0510P-102-D	J24189119			
R 1083	CHIP RES.	1K	1/16W	0.5%	RR0510P-102-D	J24189119			
R 1084	CHIP RES.	470	1/16W	5%	RMC1/16 471JATP	J24185471			
R 1085	CHIP RES.	470	1/16W	5%	RMC1/16 471JATP	J24185471			
R 1086	CHIP RES.	470	1/16W	5%	RMC1/16 471JATP	J24185471			
R 1087	CHIP RES.	470	1/16W	5%	RMC1/16 471JATP	J24185471			
R 1088	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 1089	CHIP RES.	680	1/16W	5%	RMC1/16 681JATP	J24185681			
R 1090	CHIP RES.	680	1/16W	5%	RMC1/16 681JATP	J24185681			
R 1091	CHIP RES.	680	1/16W	5%	RMC1/16 681JATP	J24185681			
R 1092	CHIP RES.	680	1/16W	5%	RMC1/16 681JATP	J24185681			
R 1093	CHIP RES.	33K	1/16W	0.5%	RR0510R-333-D	J24189155			
R 1094	CHIP RES.	680	1/16W	5%	RMC1/16 681JATP	J24185681			
R 1095	CHIP RES.	680	1/16W	5%	RMC1/16 681JATP	J24185681			
R 1096	CHIP RES.	680	1/16W	5%	RMC1/16 681JATP	J24185681			
R 1097	CHIP RES.	1K	1/16W	0.5%	RR0510P-102-D	J24189119			
R 1098	CHIP RES.	1K	1/16W	0.5%	RR0510P-102-D	J24189119			
R 1099	CHIP RES.	22K	1/16W	0.5%	RR0510R-223-D	J24189151			
R 1100	CHIP RES.	22K	1/16W	0.5%	RR0510R-223-D	J24189151			
R 1101	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 1102	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 1103	CHIP RES.	15K	1/16W	0.5%	RR0510R-153-D	J24189147			
R 1104	CHIP RES.	4.7K	1/16W	0.5%	RR0510P-472-D	J24189135			
R 1105	CHIP RES.	4.7K	1/16W	0.5%	RR0510P-472-D	J24189135			
R 1106	CHIP RES.	390K	1/16W	5%	RMC1/16S 394JTH	J24189056			
R 1107	CHIP RES.	1.5K	1/16W	0.5%	RR0510P-152-D	J24189123			
R 1108	CHIP RES.	4.7K	1/16W	0.5%	RR0510P-472-D	J24189135			

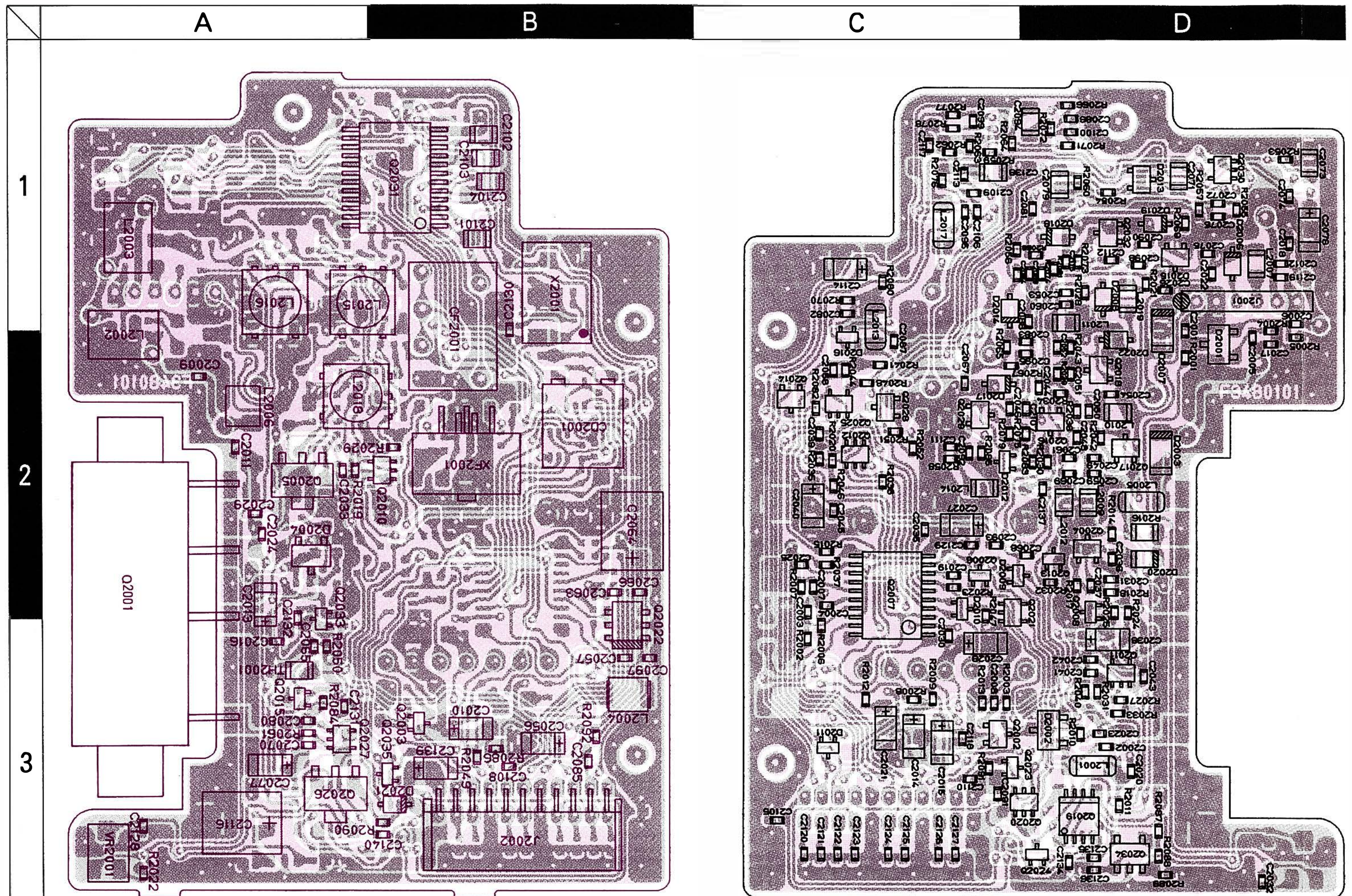
REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
R 1109	CHIP RES.	3.3K	1/16W	0.5%	RR0510P-332-D	J24189131			
R 1110	CHIP RES.	3.3K	1/16W	0.5%	RR0510P-332-D	J24189131			
R 1111	CHIP RES.	1K	1/16W	0.5%	RR0510P-102-D	J24189119			
R 1112	CHIP RES.	1K	1/16W	0.5%	RR0510P-102-D	J24189119			
R 1113	CHIP RES.	4.7K	1/16W	0.5%	RR0510P-472-D	J24189135			
R 1114	CHIP RES.	2.2K	1/16W	0.5%	RR0510P-222-D	J24189127			
R 1115	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 1116	CHIP RES.	220	1/16W	0.5%	RR0510P-221-D	J24189103			
R 1117	CHIP RES.	4.7	1/10W	5%	RMC1/10T 4R7J	J24205479			
R 1118	CHIP RES.	220	1/16W	0.5%	RR0510P-221-D	J24189103			
R 1119	CHIP RES.	18	1/16W	5%	RMC1/16S 180JTH	J24189004			
R 1120	CHIP RES.	18	1/16W	5%	RMC1/16S 180JTH	J24189004			
R 1121	CHIP RES.	18	1/16W	5%	RMC1/16S 180JTH	J24189004			
R 1122	CHIP RES.	18	1/16W	5%	RMC1/16S 180JTH	J24189004			
R 1123	CHIP RES.	47K	1/16W	0.5%	RR0510R-473-D	J24189159			
R 1124	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 1125	CHIP RES.	150K	1/16W	5%	RMC1/16S 154JTH	J24189051			
R 1126	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 1127	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 1128	CHIP RES.	0	1/16W	5%	RMC1/16 000JATP	J24185000			
R 1129	CHIP RES.	390K	1/16W	5%	RMC1/16S 394JTH	J24189056			
R 1130	CHIP RES.	15K	1/16W	0.5%	RR0510R-153-D	J24189147			
R 1131	CHIP RES.	150K	1/16W	5%	RMC1/16S 154JTH	J24189051			
R 1132	CHIP RES.	3.3K	1/16W	0.5%	RR0510P-332-D	J24189131			
R 1133	CHIP RES.	18	1/16W	5%	RMC1/16S 180JTH	J24189004			
R 1134	CHIP RES.	18	1/16W	5%	RMC1/16S 180JTH	J24189004			
R 1135	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 1136	CHIP RES.	0	1/16W	5%	RMC1/16 000JATP	J24185000			
S 1001	TACT SWITCH				SOP-112HST	N5090071			
S 1002	TACT SWITCH				SOP-112HST	N5090071			
S 1003	TACT SWITCH				SOP-112HST	N5090071			
S 1004	TACT SWITCH				SKQDAA	N5090051			
S 1005	ROTARY CODE S.W.				EC09P20-48	Q9000565			
	HOLDER PLATE (JACK)					R0150230			
	HOLDER FRAME (LCD)					R0150250			
	SHIELD PLATE (LCD)					R0150810			
	SHIELD PLATE (CPU)					R0150820			
	MYLAR (RI)					R7150420			
	INTER CONNECTOR					R7150430			
	MYLAR (SP)					R7150900			

Circuit Diagram



APC TX POWER	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
Low 1	1.3V	0.3V	0.7V	0.4V	3.0V
Low 2	1.7V	0.8V	1.3V	1.0V	3.0V
Low 3	1.9V	1.1V	1.6V	1.2V	3.0V
E L	0.4V	0.2V	0.7V	0.3V	0V
High	2.2V	1.7V	2.2V	1.8V	3.0V

Parts Layout



J2002
To CONTACT Unit J6001
(See Page 4F-1)

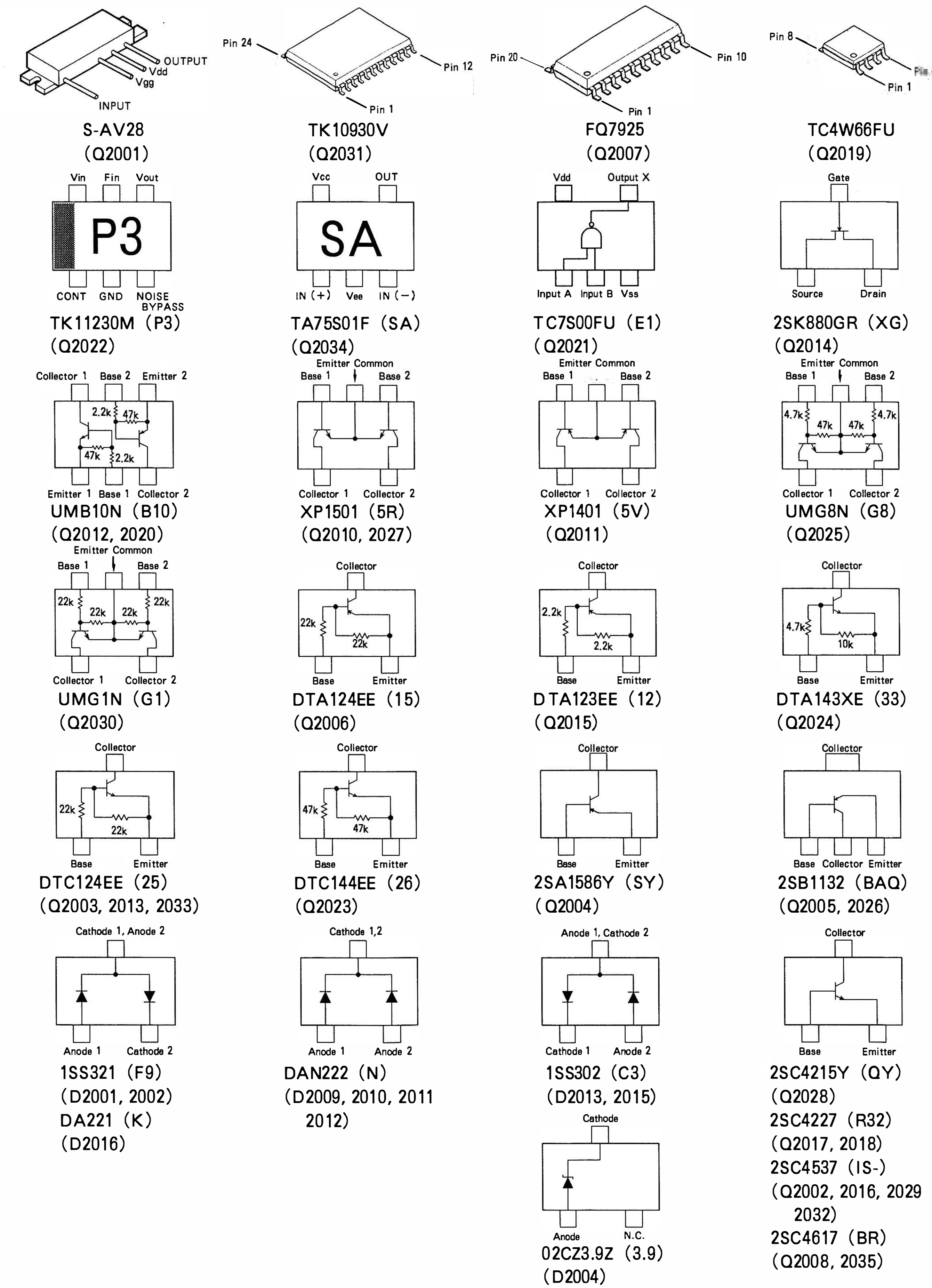
1. GND	2. GND
3. +B	4. +B
5. TX V	6. SAVE
7. POW ON	8. GND
9. DATA	10. CLOCK
11. STB V	12. 12.8MHz
13. GND	14. GND
15. PO ADJ	16. EL
17. V DET	18. SQ N V
19. SIG/TEMP V	20. MOD
21. ULT3 V	22. 5V

obverse view of component side

J2001
To 430-Mother Unit J3001
(See Page 4C-3)

1. U/U ANT
2. GND
3. V/V ANT
4. GND
5. 144 ANT
6. GND

obverse view of chip side



Parts List

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
		*** 144-MOTHER UNIT ***							
	PCB With Components (W/ 144-VCO UNIT)					CP5034001			
	Printed Circuit Board					F3480101			
C 2001	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2002	CHIP CAP.	22pF	25V	CH	TMK105CH220J-F	K22148222			
C 2003	CHIP CAP.	100pF	25V	CH	TMK105CH101J-F	K22148238			
C 2004	CHIP CAP.	100pF	25V	CH	TMK105CH101J-F	K22148238			
C 2005	CHIP CAP.	0.5pF	25V	CK	TMK105CK0R5C-F	K22148204			
C 2006	CHIP CAP.	0.5pF	25V	CK	TMK105CK0R5C-F	K22148204			
C 2007	CHIP CAP.	100pF	25V	CH	TMK105CH101J-F	K22148238			
C 2008	CHIP CAP.	18pF	25V	CH	TMK105CH180J-F	K22148220			
C 2009	CHIP CAP.	100pF	25V	CH	TMK105CH101J-F	K22148238			
C 2010	TANTALUM CHIP CAP.	4.7uF	6.3V		TEMSVA0J475M-8R	K78080017			
C 2011	CHIP CAP.	15pF	25V	CH	TMK105CH150J-F	K22148218			
C 2012	CHIP CAP.	6pF	25V	CH	TMK105CH060D-F	K22148210			
C 2013	TANTALUM CHIP CAP.	4.7uF	10V		TEMSVA1A475M-8R	K78100022			
C 2014	TANTALUM CHIP CAP.	0.1uF	35V		TESVA1V104M1-8R	K78160025			
C 2015	TANTALUM CHIP CAP.	0.1uF	35V		TESVA1V104M1-8R	K78160025			
C 2016	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2017	CHIP CAP.	39pF	25V	CH	TMK105CH390J-F	K22148228			
C 2018	CHIP CAP.	39pF	25V	CH	TMK105CH390J-F	K22148228			
C 2019	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2020	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2021	TANTALUM CHIP CAP.	10uF	6.3V		TEMSVA0J106M-8R	K78080027			
C 2022	CHIP CAP.	56pF	25V	CH	TMK105CH560J-F	K22148232			
C 2023	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2024	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2025	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2026	CHIP CAP.	22pF	25V	CH	TMK105CH220J-F	K22148222			
C 2027	TANTALUM CHIP CAP.	4.7uF	6.3V		TEMSVA0J475M-8R	K78080017			
C 2028	TANTALUM CHIP CAP.	10uF	6.3V		TEMSVA0J106M-8R	K78080027			
C 2029	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2030	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2031	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2032	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2033	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2035	CHIP CAP.	0.047uF	16V	F	EMK105F473Z-F	K22129002			
C 2037	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2038	TANTALUM CHIP CAP.	1uF	16V		TESVA1C105M1-8R	K78120009			
C 2039	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2040	TANTALUM CHIP CAP.	4.7uF	6.3V		TEMSVA0J475M-8R	K78080017			
C 2041	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2042	CHIP CAP.	0.047uF	16V	F	EMK105F473Z-F	K22129002			
C 2043	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2044	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2045	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
C 2046	CHIP CAP.	8pF	25V	CH	TMK105CH080D-F	K22148212			
C 2048	CHIP CAP.	9pF	25V	CH	TMK105CH090D-F	K22148213			
C 2049	CHIP CAP.	6pF	25V	CH	TMK105CH060D-F	K22148210			
C 2050	CHIP CAP.	4pF	25V	CH	TMK105CH040C-F	K22148208			
C 2051	CHIP CAP.	3pF	25V	CJ	TMK105CJ030C-F	K22148207			
C 2052	CHIP CAP.	6pF	25V	CH	TMK105CH060D-F	K22148210			
C 2053	CHIP CAP.	2pF	25V	CK	TMK105CK020C-F	K22148206			
C 2054	CHIP CAP.	5pF	25V	CH	TMK105CH050C-F	K22148209			
C 2056	TANTALUM CHIP CAP.	3.3uF	16V		TEMSVA1C335M-8R	K78120021			
C 2057	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2058	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2059	CHIP CAP.	2pF	25V	CK	TMK105CK020C-F	K22148206			
C 2060	CHIP CAP.	7pF	25V	CH	TMK105CH070D-F	K22148211			
C 2061	CHIP CAP.	4pF	25V	CH	TMK105CH040C-F	K22148208			
C 2063	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2064	TANTALUM CHIP CAP.	100uF	4V		TEMSVC0G107M12R	K78060021			
C 2065	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2066	CHIP CAP.	0.01uF	16V	B	EMK105B103K-F	K22128802			
C 2067	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2068	CHIP CAP.	5pF	25V	CH	TMK105CH050C-F	K22148209			
C 2069	CHIP CAP.	4pF	25V	CH	TMK105CH040C-F	K22148208			
C 2070	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2071	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 2072	CHIP CAP.	330pF	25V	B	TMK105B331K-F	K22148814			
C 2073	CHIP CAP.	0.01uF	50V	B	GRM40B103M50PT	K22170817			
C 2074	CHIP CAP.	0.047uF	16V	F	EMK105F473Z-F	K22129002			
C 2075	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2076	CHIP CAP.	330pF	25V	B	TMK105B331K-F	K22148814			
C 2077	TANTALUM CHIP CAP.	4.7uF	6.3V		TEMSVA0J475M-8R	K78080017			
C 2078	TANTALUM CHIP CAP.	10uF	6.3V		TEMSVA0J106M-8R	K78080027			
C 2079	CHIP CAP.	0.033uF	25V	B	GRM40B333M25PT	K22140810			
C 2080	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2081	CHIP CAP.	0.01uF	16V	B	EMK105B103K-F	K22128802			
C 2082	CHIP CAP.	47pF	25V	CH	TMK105CH470J-F	K22148230			
C 2083	CHIP CAP.	3pF	25V	CJ	TMK105CJ030C-F	K22148207			
C 2084	CHIP CAP.	3pF	25V	CJ	TMK105CJ030C-F	K22148207			
C 2085	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2087	CHIP CAP.	0.01uF	16V	B	EMK105B103K-F	K22128802			
C 2088	CHIP CAP.	1pF	25V	CK	TMK105CK010C-F	K22148205			
C 2089	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2090	CHIP CAP.	180pF	16V	CH	EMK105CH181J-F	K22128206			
C 2091	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2092	CHIP CAP.	39pF	25V	CH	TMK105CH390J-F	K22148228			
C 2093	CHIP CAP.	2pF	25V	CK	TMK105CK020C-F	K22148206			
C 2094	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 2095	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2096	CHIP CAP.	22pF	25V	CH	TMK105CH220J-F	K22148222			
C 2098	CHIP CAP.	22pF	25V	CH	TMK105CH220J-F	K22148222			
C 2099	CHIP CAP.	68pF	25V	CH	TMK105CH680J-F	K22148234			

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
C 2100	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2101	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 2102	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 2103	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 2104	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 2105	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2106	CHIP CAP.	39pF	25V	CH	TMK105CH390J-F	K22148228			
C 2107	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2108	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2109	CHIP CAP.	0.01uF	16V	B	EMK105B103K-F	K22128802			
C 2110	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2111	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2112	CHIP CAP.	10pF	25V	CH	TMK105CH100D-F	K22148214			
C 2113	CHIP CAP.	0.01uF	16V	B	EMK105B103K-F	K22128802			
C 2114	TANTALUM CHIP CAP.	10uF	6.3V		TEMSVA0J106M-8R	K78080027			
C 2115	CHIP CAP.	150pF	16V	CH	EMK105CH151J-F	K22128204			
C 2116	TANTALUM CHIP CAP.	47uF	16V		TEMSVD21C476M12R	K78120027			
C 2118	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2119	CHIP CAP.	18pF	25V	CH	TMK105CH180J-F	K22148220			
C 2121	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2122	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2123	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2125	CHIP CAP.	100pF	25V	CH	TMK105CH101J-F	K22148238			
C 2126	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2127	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2135	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2136	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2138	CHIP CAP.	0.033uF	25V	B	GRM40B333M25PT	K22140810			
C 2139	TANTALUM CHIP CAP.	10uF	6.3V		TEMSVA0J106M-8R	K78080027			
C 2140	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 2141	CHIP CAP.	100pF	25V	CH	TMK105CH101J-F	K22148238			
CD2001	CERAMIC DISC				CDBM455C7T	H7900910			
CF2001	CERAMIC FILTER				CFWM455F	H3900395			
D 2001	DIODE				1SS321 TE85R	G2070076			
D 2002	DIODE				1SS321 TE85R	G2070076			
D 2003	DIODE				RLS135 TE-11	G2070128			
D 2004	DIODE				02CZ3.9Z TE85R	G2070144			
D 2006	DIODE				HSU277	G2070118			
D 2007	DIODE				RLS135 TE-11	G2070128			
D 2008	DIODE				HSU277	G2070118			
D 2009	DIODE				DAN222 TL	G2070174			
D 2010	DIODE				DAN222 TL	G2070174			
D 2011	DIODE				DAN222 TL	G2070174			
D 2012	DIODE				DAN222 TL	G2070174			
D 2013	DIODE				1SS302 TE85R	G2070088			
D 2014	DIODE				MA111-(TX)	G2070338			

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
D 2015	DIODE				1SS302 TE85R	G2070088			
D 2016	DIODE				DA221 TL	G2070178			
D 2017	DIODE				HVU350-TR	G2070380			
D 2018	DIODE				HVU350-TR	G2070380			
D 2019	DIODE				HVU202A-TR	G2070332			
D 2021	DIODE				MA111-(TX)	G2070338			
D 2022	DIODE				MA111-(TX)	G2070338			
J 2001	CONNECTOR				9230B-1-06Z071-T	P0091041			
J 2002	CONNECTOR				22PS-JED	P0091007			
L 2001	M.RFC	0.082uH			LER015T082M	L1690197			
L 2002	COIL				6.5T2.0D0.5UEW R	L0021803A			
L 2003	COIL				6.5T2.0D0.5UEW R	L0021803A			
L 2004	M.RFC	220uH			FLC32T-221J	L1690231			
L 2005	M.RFC	1uH			LER015T1R0M	L1690119			
L 2006	COIL				5.5T2.0D0.5UEW R	L0020736A			
L 2007	M.RFC	0.082uH			HK2125 82NK-T	L1690388			
L 2009	M.RFC	0.012uH			HK2125 12NK-T	L1690378			
L 2010	M.RFC	0.012uH			HK2125 12NK-T	L1690378			
L 2011	M.RFC	0.012uH			HK2125 12NK-T	L1690378			
L 2012	M.RFC	0.015uH			HK2125 15NK-T	L1690379			
L 2013	M.RFC	0.22uH			LER015TR22M	L1690111			
L 2014	M.RFC	0.33uH			LK2125 R33K-T	L1690313			
L 2015	COIL				KE-07528	L0022307			
L 2016	COIL				KE-07467	L0022306			
L 2017	M.RFC	0.47uH			LER015TR47M	L1690115			
L 2018	COIL				KE-07467	L0022306			
L 2019	M.RFC	1.0uH			LK2125 1R0K-T	L1690319			
Q 2001	IC				S-AV28	G1091662			A-2
Q 2002	TRANSISTOR				2SC4537 TR	G3345377			C-3
Q 2003	TRANSISTOR				DTC124EE TL	G3070109			B-3
Q 2004	TRANSISTOR				2SA1586Y TE85R	G3115867Y			D-2
Q 2005	TRANSISTOR				2SB1132 T100 Q	G3211327Q			A-2
Q 2006	TRANSISTOR				DTA124EE TL	G3070116			C-2
Q 2007	IC				FQ7925	G1091710			C-2
Q 2008	TRANSISTOR				2SC4617 TL R	G3346178R			D-2
Q 2010	TRANSISTOR				XP1501-(TX)	G3070143			B-2
Q 2011	TRANSISTOR				XP1401-(TX)	G3070142			D-3
Q 2012	TRANSISTOR				UMB10N TN	G3070108			C-2
Q 2013	TRANSISTOR				DTC124EE TL	G3070109			D-2
Q 2014	FET				2SK880GR TE85R	G3808807G			C-2
Q 2015	TRANSISTOR				DTA123EE TL	G3070144			A-3
Q 2016	TRANSISTOR				2SC4537 TR	G3345377			D-2
Q 2017	TRANSISTOR				2SC4227-T2B R32	G3342277B			D-2
Q 2018	TRANSISTOR				2SC4227-T2B R32	G3342277B			D-2
Q 2019	IC				TC4W66FU TE12L	G1091676			D-3
Q 2020	TRANSISTOR				UMB10N TN	G3070108			C-3

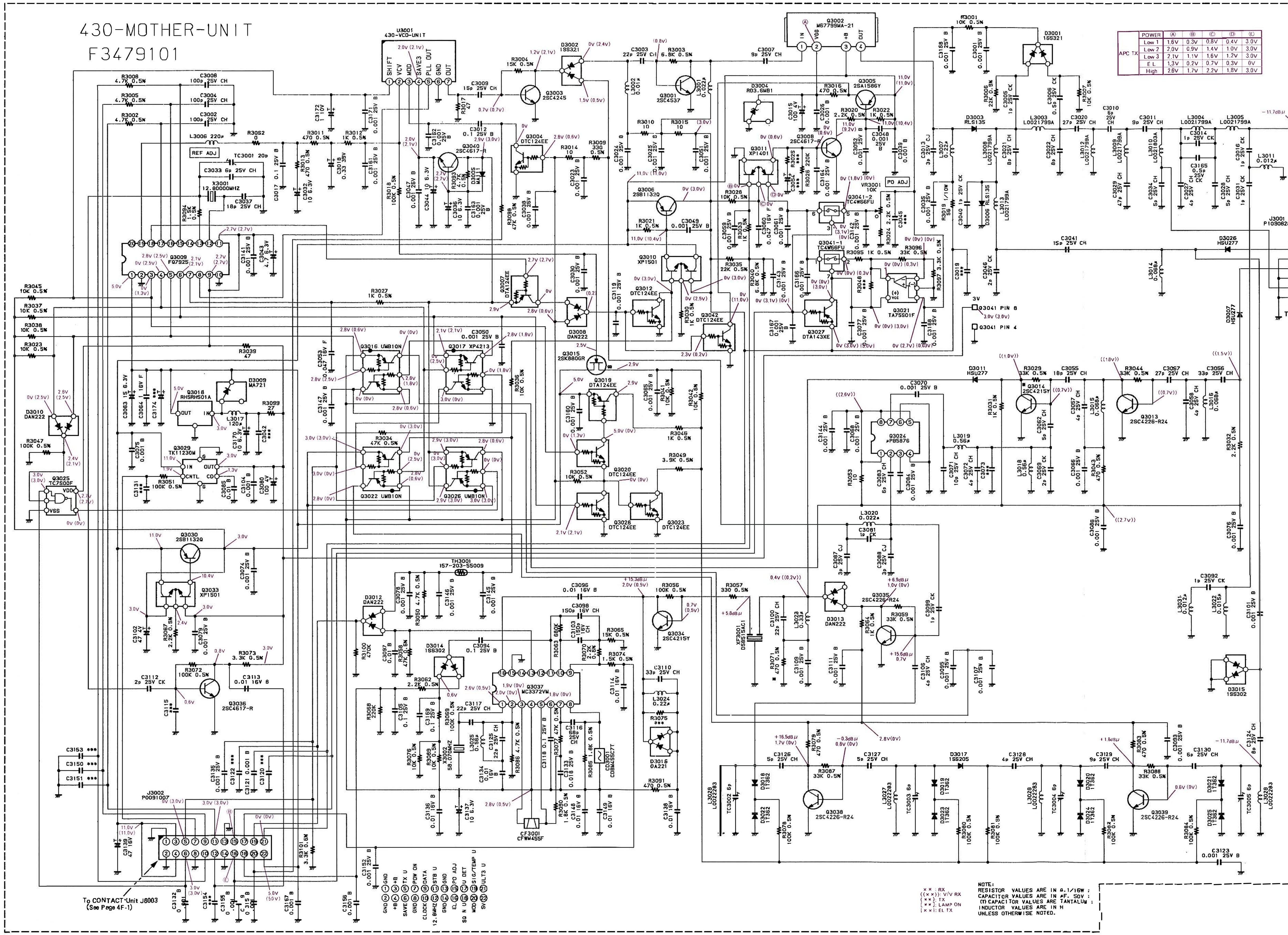
REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
Q 2021	IC				TC7S00FU TE85R	G1091527			C-2
Q 2022	IC				TK11230M	G1091656			B-3
Q 2023	TRANSISTOR				DTC144EE TL	G3070075			C-3
Q 2024	TRANSISTOR				DTA143XE TL	G3070093			D-3
Q 2025	TRANSISTOR				UMG8N TR	G3070145			C-2
Q 2026	TRANSISTOR				2SB1132 T100 Q	G3211327Q			A-3
Q 2027	TRANSISTOR				XP1501-(TX)	G3070143			A-3
Q 2028	TRANSISTOR				2SC4215Y TE85R	G3342157Y			C-2
Q 2029	TRANSISTOR				2SC4537 TR	G3345377			C-2
Q 2030	TRANSISTOR				UMG1N TR	G3070113			D-1
Q 2031	IC				TK10930VT1	G1091606			B-1
Q 2032	TRANSISTOR				2SC4537 TR	G3345377			D-1
Q 2033	TRANSISTOR				DTC124EE TL	G3070109			A-3
Q 2034	IC				TA75S01F TE85R	G1091593			D-3
Q 2035	TRANSISTOR				2SC4617 TL R	G3346178R			B-3
R 2001	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 2002	CHIP RES.	4.7K	1/16W	0.5%	RR0510P-472-D	J24189135			
R 2003	CHIP RES.	4.7K	1/16W	0.5%	RR0510P-472-D	J24189135			
R 2004	CHIP RES.	6.8K	1/16W	0.5%	RR0510P-682-D	J24189139			
R 2005	CHIP RES.	6.8K	1/16W	0.5%	RR0510P-682-D	J24189139			
R 2006	CHIP RES.	4.7K	1/16W	0.5%	RR0510P-472-D	J24189135			
R 2007	CHIP RES.	4.7K	1/16W	0.5%	RR0510P-472-D	J24189135			
R 2008	CHIP RES.	4.7K	1/16W	0.5%	RR0510P-472-D	J24189135			
R 2009	CHIP RES.	6.8K	1/16W	0.5%	RR0510P-682-D	J24189139			
R 2010	CHIP RES.	390	1/16W	0.5%	RR0510P-391-D	J24189109			
R 2011	CHIP RES.	10	1/16W	5%	RMC1/16S 100JTH	J24189001			
R 2012	CHIP RES.	680	1/16W	0.5%	RR0510P-681-D	J24189115			
R 2013	CHIP RES.	47	1/16W	5%	RMC1/16S 470JTH	J24189009			
R 2014	CHIP RES.	470	1/16W	0.5%	RR0510P-471-D	J24189111			
R 2015	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 2016	CHIP RES.	68	1/10W	5%	RMC1/10T 680J	J24205680			
R 2017	CHIP RES.	3.3K	1/16W	0.5%	RR0510P-332-D	J24189131			
R 2018	CHIP RES.	1K	1/16W	0.5%	RR0510P-102-D	J24189119			
R 2019	CHIP RES.	1K	1/16W	0.5%	RR0510P-102-D	J24189119			
R 2020	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 2021	CHIP RES.	1.5K	1/16W	0.5%	RR0510P-152-D	J24189123			
R 2022	CHIP RES.	3.9K	1/16W	0.5%	RR0510P-392-D	J24189133			
R 2023	CHIP RES.	1K	1/16W	0.5%	RR0510P-102-D	J24189119			
R 2024	CHIP RES.	1K	1/16W	0.5%	RR0510P-102-D	J24189119			
R 2025	CHIP RES.	180K	1/16W	5%	RMC1/16S 184JTH	J24189052			
R 2027	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 2028	CHIP RES.	2.2K	1/16W	0.5%	RR0510P-222-D	J24189127			
R 2029	CHIP RES.	1K	1/16W	0.5%	RR0510P-102-D	J24189119			
R 2030	CHIP RES.	680	1/16W	0.5%	RR0510P-681-D	J24189115			
R 2031	CHIP RES.	1K	1/16W	0.5%	RR0510P-102-D	J24189119			
R 2032	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 2033	CHIP RES.	22K	1/16W	0.5%	RR0510R-223-D	J24189151			
R 2034	CHIP RES.	180K	1/16W	5%	RMC1/16S 184JTH	J24189052			

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
R 2035	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 2036	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 2037	CHIP RES.	47	1/16W	5%	RMC1/16S 470JTH	J24189009			
R 2038	CHIP RES.	560	1/16W	0.5%	RR0510P-561-D	J24189113			
R 2039	CHIP RES.	560	1/16W	0.5%	RR0510P-561-D	J24189113			
R 2040	CHIP RES.	8.2K	1/16W	0.5%	RR0510P-822-D	J24189141			
R 2041	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 2042	CHIP RES.	33K	1/16W	0.5%	RR0510R-333-D	J24189155			
R 2043	CHIP RES.	33K	1/16W	0.5%	RR0510R-333-D	J24189155			
R 2044	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 2046	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 2047	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 2048	CHIP RES.	2.7K	1/16W	0.5%	RR0510P-272-D	J24189129			
R 2049	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 2050	CHIP RES.	4.7K	1/16W	0.5%	RR0510P-472-D	J24189135			
R 2051	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 2052	CHIP RES.	560	1/16W	0.5%	RR0510P-561-D	J24189113			
R 2053	CHIP RES.	180K	1/16W	5%	RMC1/16S 184JTH	J24189052			
R 2054	CHIP RES.	6.8K	1/16W	0.5%	RR0510P-682-D	J24189139			
R 2055	CHIP RES.	680K	1/16W	5%	RMC1/16S 684JTH	J24189059			
R 2056	CHIP RES.	4.7K	1/16W	0.5%	RR0510P-472-D	J24189135			
R 2057	CHIP RES.	1.2K	1/16W	0.5%	RR0510P-122-D	J24189121			
R 2058	CHIP RES.	1K	1/16W	0.5%	RR0510P-102-D	J24189119			
R 2059	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 2060	CHIP RES.	180K	1/16W	5%	RMC1/16S 184JTH	J24189052			
R 2061	CHIP RES.	2.2K	1/16W	0.5%	RR0510P-222-D	J24189127			
R 2062	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 2063	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 2064	CHIP RES.	1.5K	1/16W	0.5%	RR0510P-152-D	J24189123			
R 2065	CHIP RES.	4.7K	1/16W	0.5%	RR0510P-472-D	J24189135			
R 2066	CHIP RES.	22K	1/16W	0.5%	RR0510R-223-D	J24189151			
R 2067	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 2068	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 2069	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 2071	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 2072	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 2073	CHIP RES.	47K	1/16W	0.5%	RR0510R-473-D	J24189159			
R 2074	CHIP RES.	1K	1/16W	0.5%	RR0510P-102-D	J24189119			
R 2075	CHIP RES.	470	1/16W	0.5%	RR0510P-471-D	J24189111			
R 2076	CHIP RES.	47K	1/16W	0.5%	RR0510R-473-D	J24189159			
R 2077	CHIP RES.	2.7K	1/16W	0.5%	RR0510P-272-D	J24189129			
R 2078	CHIP RES.	1.8K	1/16W	0.5%	RR0510P-182-D	J24189125			
R 2079	CHIP RES.	39K	1/16W	0.5%	RR0510R-393-D	J24189157			
R 2080	CHIP RES.	100	1/16W	0.5%	RR0510P-101-D	J24189095			
R 2081	CHIP RES.	100	1/16W	0.5%	RR0510P-101-D	J24189095			
R 2082	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 2083	CHIP RES.	0	1/16W		RMC1/16S JPTH	J24189070			
R 2084	CHIP RES.	0	1/16W		RMC1/16S JPTH	J24189070			
R 2085	CHIP RES.	390	1/16W	0.5%	RR0510P-391-D	J24189109			

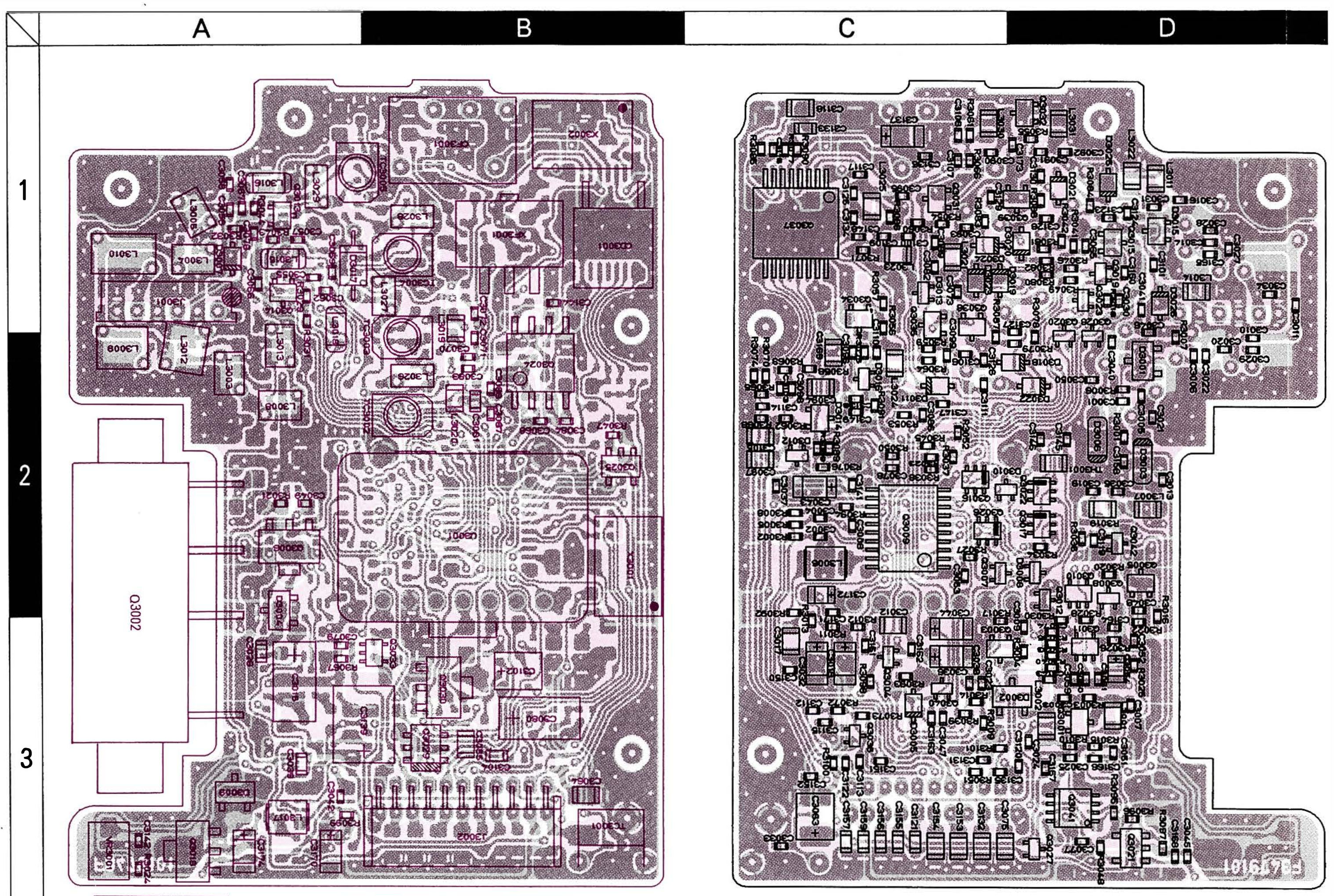
REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
R 2086	CHIP RES.	47K	1/16W	0.5%	RR0510R-473-D	J24189159			
R 2087	CHIP RES.	1K	1/16W	0.5%	RR0510P-102-D	J24189119			
R 2088	CHIP RES.	33K	1/16W	0.5%	RR0510R-333-D	J24189155			
R 2089	CHIP RES.	3.3K	1/16W	0.5%	RR0510P-332-D	J24189131			
R 2090	CHIP RES.	4.7K	1/16W	0.5%	RR0510P-472-D	J24189135			
R 2091	CHIP RES.	3.3K	1/16W	0.5%	RR0510P-332-D	J24189131			
R 2092	CHIP RES.	470K	1/16W	5%	RMC1/16S 474JTH	J24189057			
TH2001	THERMISTOR				157-203-55009TP	G9090045			
VR2001	POT.	10K			RH03AVA14X01A	J50785103			
X 2001	XTAL	44.595MHz				H0103074			
XF2001	XTAL				D45015AC1	H1102251			
	HOLDER PLATE (PM.)					R0150700			

Notes

Circuit Diagram



Parts Layout



obverse view of chip side

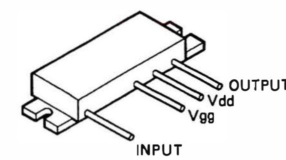
6. GND	5. 144 ANT	4. GND	3. V/V ANT	2. GND	1. U/U ANT

J3001
To 144-Mother Unit J2001
(See Page 4B-3)

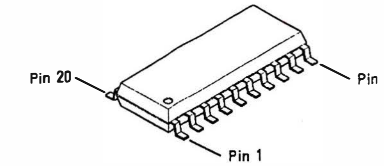
2. GND	4. +B	6. SAVE	8. GND	10. CLOCK	12. 12.8MHz	14. GND	16. EL	18. SQ N U	20. MOD	22. 5V
1. GND	3. +B	5. TX U	7. POW ON	9. DATA	11. STB U	13. GND	15. PO ADJ	17. U DET	19. SIG/TEMP U	21. ULT3 U

J3002
To CONTACT Unit J6003
(See Page 4F-1)

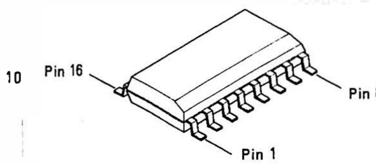
obverse view of component side



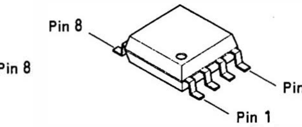
M67799MA
(Q3002)



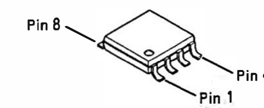
FQ7925
(Q3009)



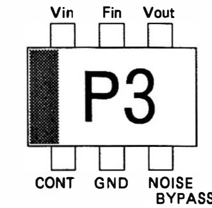
MC3372VMEL
(Q3037)



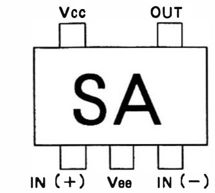
μPB587
(Q3024)



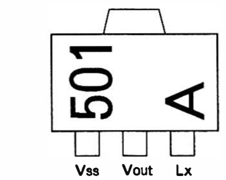
TC4W66FU
(Q3041)



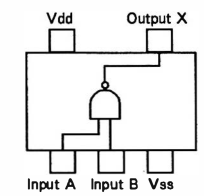
TK11230M (P3)
(Q3029)



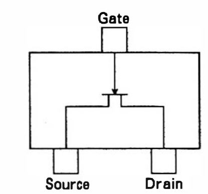
TA75S01F (SA)
(Q3021)



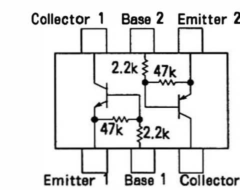
RH5RH501A (501A)
(Q3018)



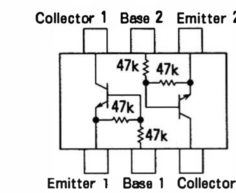
TC7S00F (E1)
(Q3025)



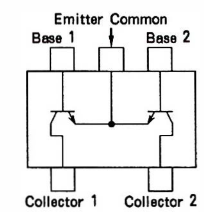
2SK880GR (XG)
(Q3015)



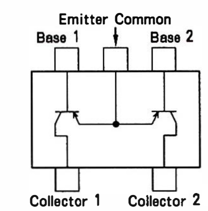
UMB10N (B10)
(Q3016, 3022, 3026)



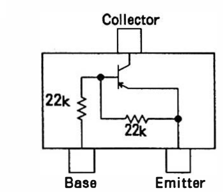
XP4213 (8S)
(Q3017)



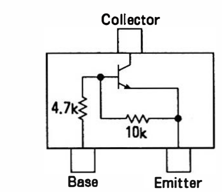
XP1501 (5R)
(Q3010, 3033)



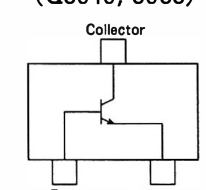
XP1401 (5V)
(Q3011)



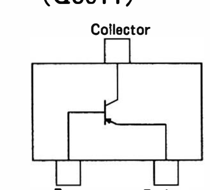
DTA124EE (15)
(Q3007, 3019)



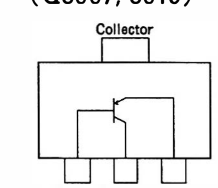
DTA143XE (33)
(Q3027)



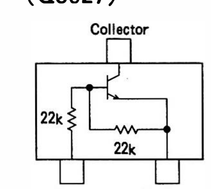
2SC4215Y (QY)
(Q3014, 3034)
2SC4226 (R24)
(Q3013, 3035, 3038, 3039)
2SC4245 (HB)
(Q3003)
2SC4537 (IS-)
(Q3001)
2SC4617 (BR)
(Q3008, 3036, 3040)



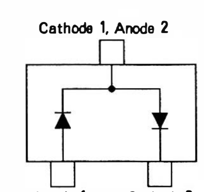
2SA1586Y (SY)
(Q3005)



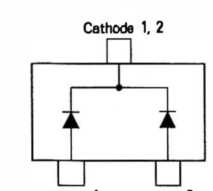
2SB1132 (BAQ)
(Q3006, 3030)



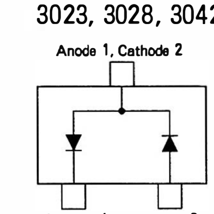
DTC124EE (25)
(Q3004, 3012, 3020
3023, 3028, 3042)



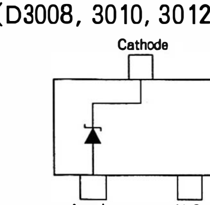
1SS321 (F9)
(D3001, 3002)
DA221 (K)
(D3016)



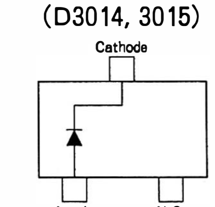
DAN222 (N)
(D3008, 3010, 3012, 3013)



1SS302 (C3)
(D3014, 3015)



RD3.6MB1 (361)
(D3004)



MA721 (M1M)
(D3009)

Parts List

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
		*** 430-MOTHER UNIT ***							
	PCB With Components (W/430-VCO UNIT)					CP5039002	DST USA		
	PCB With Components (W/430-VCO UNIT)					CP5039003	DST EXP		
	Printed Circuit Board					F3479101			
C 3001	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3002	CHIP CAP.	100pF	25V	CH	TMK105CH101J-F	K22148238			
C 3003	CHIP CAP.	22pF	25V	CH	TMK105CH220J-F	K22148222			
C 3004	CHIP CAP.	100pF	25V	CH	TMK105CH101J-F	K22148238			
C 3005	CHIP CAP.	1pF	25V	CK	TMK105CK010C-F	K22148205			
C 3006	CHIP CAP.	0.5pF	25V	CK	TMK105CK0R5C-F	K22148204			
C 3007	CHIP CAP.	9pF	25V	CH	TMK105CH090D-F	K22148213			
C 3008	CHIP CAP.	100pF	25V	CH	TMK105CH101J-F	K22148238			
C 3009	CHIP CAP.	15pF	25V	CH	TMK105CH150J-F	K22148218			
C 3010	CHIP CAP.	6pF	25V	CH	TMK105CH060D-F	K22148210			
C 3011	CHIP CAP.	9pF	25V	CH	TMK105CH090D-F	K22148213			
C 3012	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 3013	CHIP CAP.	3pF	25V	CJ	TMK105CJ030C-F	K22148207			
C 3014	CHIP CAP.	1pF	25V	CK	TMK105CK010C-F	K22148205			
C 3015	TANTALUM CHIP CAP.	100uF	4V		TEMSVC0G107M12R	K78060021			
C 3016	CHIP CAP.	1pF	25V	CK	TMK105CK010C-F	K22148205			
C 3017	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 3018	TANTALUM CHIP CAP.	0.33uF	35V		TESVA1V334M1-8R	K78160028			
C 3020	CHIP CAP.	27pF	25V	CH	TMK105CH270J-F	K22148224			
C 3021	CHIP CAP.	8pF	25V	CH	TMK105CH080D-F	K22148212			
C 3022	CHIP CAP.	8pF	25V	CH	TMK105CH080D-F	K22148212			
C 3023	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3024	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3025	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3026	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 3027	CHIP CAP.	4pF	25V	CH	TMK105CH040C-F	K22148208			
C 3028	CHIP CAP.	5pF	25V	CH	TMK105CH050C-F	K22148209			
C 3029	CHIP CAP.	47pF	25V	CH	TMK105CH470J-F	K22148230			
C 3030	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3031	CHIP CAP.	1pF	25V	CK	TMK105CK010C-F	K22148205			
C 3032	TANTALUM CHIP CAP.	10uF	6.3V		TEMSVA0J106M-8R	K78080027			
C 3033	CHIP CAP.	6pF	25V	CH	TMK105CH060D-F	K22148210			
C 3034	CHIP CAP.	5pF	25V	CH	TMK105CH050C-F	K22148209			
C 3035	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3036	TANTALUM CHIP CAP.	10uF	6.3V		TEMSVA0J106M-8R	K78080027			
C 3037	CHIP CAP.	18pF	25V	CH	TMK105CH180J-F	K22148220			
C 3038	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3039	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 3040	CHIP CAP.	1pF	25V	CK	TMK105CK010C-F	K22148205			
C 3041	CHIP CAP.	15pF	25V	CH	TMK105CH150J-F	K22148218			
C 3043	TANTALUM CHIP CAP.	4.7uF	6.3V		TEMSVA0J475M-8R	K78080017			
C 3044	TANTALUM CHIP CAP.	10uF	6.3V		TEMSVA0J106M-8R	K78080027			

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
C 3046	CHIP CAP.	2pF	25V	CK	TMK105CK020C-F	K22148206			
C 3047	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3048	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3049	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3050	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3051	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3052	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3053	CHIP CAP.	0.047uF	16V	F	EMK105F473Z-F	K22129002			
C 3055	CHIP CAP.	18pF	25V	CH	TMK105CH180J-F	K22148220			
C 3056	CHIP CAP.	33pF	25V	CH	TMK105CH330J-F	K22148226			
C 3057	CHIP CAP.	4pF	25V	CH	TMK105CH040C-F	K22148208			
C 3058	CHIP CAP.	4pF	25V	CH	TMK105CH040C-F	K22148208			
C 3059	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3060	CHIP CAP.	0.047uF	16V	F	EMK105F473Z-F	K22129002			
C 3061	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3062	CHIP CAP.	5pF	25V	CH	TMK105CH050C-F	K22148209			
C 3063	TANTALUM CHIP CAP.	15uF	6.3V		TEMSVB20J156M-8R	K78080023			
C 3064	CHIP CAP.	1uF	16V	F	EMK212F105Z00T	K22121001			
C 3065	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3066	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3067	CHIP CAP.	27pF	25V	CH	TMK105CH270J-F	K22148224			
C 3068	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3069	CHIP CAP.	2pF	25V	CK	TMK105CK020C-F	K22148206			
C 3070	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3071	CHIP CAP.	10pF	25V	CH	TMK105CH100D-F	K22148214			
C 3072	CHIP CAP.	4pF	25V	CH	TMK105CH040C-F	K22148208			
C 3074	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3075	CHIP CAP.	0.001uF	50V	B	GRM40B102M50PT	K22170805			
C 3076	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3077	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3078	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3079	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3080	TANTALUM CHIP CAP.	100uF	4V		TEMSVC0G107M12R	K78060021			
C 3081	CHIP CAP.	1pF	50V	CK	GRM39CK010C50PT	K22174202			
C 3083	CHIP CAP.	6pF	25V	CH	TMK105CH060D-F	K22148210			
C 3084	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3085	CHIP CAP.	0.01uF	50V	B	GRM40B103M50PT	K22170817			
C 3086	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3087	CHIP CAP.	3pF	25V	CJ	TMK105CJ030C-F	K22148207			
C 3088	CHIP CAP.	3pF	25V	CJ	TMK105CJ030C-F	K22148207			
C 3092	CHIP CAP.	1pF	25V	CK	TMK105CK010C-F	K22148205			
C 3093	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3094	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 3095	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3096	CHIP CAP.	0.01uF	16V	B	EMK105B103K-F	K22128802			
C 3097	CHIP CAP.	0.01uF	50V	B	GRM40B103M50PT	K22170817			
C 3098	CHIP CAP.	150pF	16V	CH	EMK105CH151J-F	K22128204			
C 3099	CHIP CAP.	1pF	25V	CK	TMK105CK010C-F	K22148205			
C 3100	CHIP CAP.	22pF	25V	CH	TMK105CH220J-F	K22148222			

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
C 3101	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3102	TANTALUM CHIP CAP.	47uF	4V		TEMSVB20G476M-8R	K78060020			
C 3103	CHIP CAP.	150pF	16V	CH	EMK105CH151J-F	K22128204			
C 3104	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 3105	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 3106	CHIP CAP.	4pF	25V	CH	TMK105CH040C-F	K22148208			
C 3107	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3109	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3110	CHIP CAP.	33pF	25V	CH	TMK105CH330J-F	K22148226			
C 3111	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3112	CHIP CAP.	2pF	25V	CK	TMK105CK020C-F	K22148206			
C 3113	CHIP CAP.	0.01uF	16V	B	EMK105B103K-F	K22128802			
C 3114	CHIP CAP.	0.01uF	16V	B	EMK105B103K-F	K22128802			
C 3116	CHIP CAP.	68pF	25V	CH	TMK105CH680J-F	K22148234			
C 3117	CHIP CAP.	22pF	25V	CH	TMK105CH220J-F	K22148222			
C 3118	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 3119	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3121	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 3123	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3124	CHIP CAP.	8pF	25V	CH	TMK105CH080D-F	K22148212			
C 3125	CHIP CAP.	22pF	25V	CH	TMK105CH220J-F	K22148222			
C 3126	CHIP CAP.	5pF	25V	CH	TMK105CH050C-F	K22148209			
C 3127	CHIP CAP.	5pF	25V	CH	TMK105CH050C-F	K22148209			
C 3128	CHIP CAP.	4pF	25V	CH	TMK105CH040C-F	K22148208			
C 3129	CHIP CAP.	9pF	25V	CH	TMK105CH090D-F	K22148213			
C 3130	CHIP CAP.	6pF	25V	CH	TMK105CH060D-F	K22148210			
C 3132	CHIP CAP.	0.001uF	50V	B	GRM40B102M50PT	K22170805			
C 3133	CHIP CAP.	0.018uF	25V	B	GRM39B183K25PT	K22144806			
C 3134	CHIP CAP.	0.01uF	16V	B	EMK105B103K-F	K22128802			
C 3135	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3136	CHIP CAP.	0.01uF	16V	B	EMK105B103K-F	K22128802			
C 3137	TANTALUM CHIP CAP.	10uF	6.3V		TEMSVA0J106M-8R	K78080027			
C 3138	CHIP CAP.	0.01uF	16V	B	EMK105B103K-F	K22128802			
C 3139	CHIP TA.CAP.	47uF	16V		TEMSVD21C476M12R	K78120027			
C 3141	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3142	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3143	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3144	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3145	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3146	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3147	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3148	CHIP CAP.	0.01uF	16V	B	EMK105B103K-F	K22128802			
C 3149	CHIP CAP.	0.01uF	16V	B	EMK105B103K-F	K22128802			
C 3152	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3155	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 3156	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 3157	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 3158	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3159	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
C 3160	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3161	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3162	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3163	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3164	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3165	CHIP CAP.	0.5pF	25V	CK	TMK105CK0R5C-F	K22148204			
C 3166	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3167	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3168	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3169	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 3170	TANTALUM CHIP CAP.	10uF	6.3V		TEMSVA0J106M-8R	K78080027			
C 3171	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3172	TANTALUM CHIP CAP.	1uF	10V		TESVSP1A105M-8R	K78100032			
CD3001	CERAMIC DISC				CDBM455C7T	H7900910			
CF3001	CERAMIC FILTER				CFWM455F	H3900395			
D 3001	DIODE				1SS321 TE85R	G2070076			
D 3002	DIODE				1SS321 TE85R	G2070076			
D 3003	DIODE				RLS135 TE-11	G2070128			
D 3004	DIODE				RD3.6MB1-T1B	G2070392			
D 3005	DIODE				MA111-(TX)	G2070338			
D 3006	DIODE				RLS135 TE-11	G2070128			
D 3007	DIODE				HSU277	G2070118			
D 3008	DIODE				DAN222 TL	G2070174			
D 3009	DIODE				MA721(TX)	G2070298			
D 3010	DIODE				DAN222 TL	G2070174			
D 3011	DIODE				HSU277	G2070118			
D 3012	DIODE				DAN222 TL	G2070174			
D 3013	DIODE				DAN222 TL	G2070174			
D 3014	DIODE				1SS302 TE85R	G2070088			
D 3015	DIODE				1SS302 TE85R	G2070088			
D 3016	DIODE				DA221 TL	G2070178			
D 3017	DIODE				1SS205-T1	G2060007			
D 3018	DIODE				1T362-T8	G2070102			
D 3019	DIODE				1T362-T8	G2070102			
D 3020	DIODE				1T362-T8	G2070102			
D 3021	DIODE				1T362-T8	G2070102			
D 3022	DIODE				1T362-T8	G2070102			
D 3023	DIODE				1T362-T8	G2070102			
D 3024	DIODE				1T362-T8	G2070102			
D 3025	DIODE				1T362-T8	G2070102			
D 3026	DIODE				HSU277	G2070118			
J 3001	CONNECTOR				9120S-06B	P1090826			
J 3002	CONNECTOR				22PS-JED	P0091007			
L 3001	M.RFC	0.022uH			HK2125 22NK-T	L1690381			

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
L 3002	M.RFC	0.01uH			HK2125 10NK-T	L1690377			
L 3003	COIL				2.5T2.0D0.5UEW R	L0021799A			
L 3004	COIL				2.5T2.0D0.5UEW R	L0021799A			
L 3005	COIL				2.5T2.0D0.5UEW R	L0021799A			
L 3006	M.RFC	220uH			FLC32T-221J	L1690231			
L 3007	M.RFC	0.22uH			LK2125 R22K-T	L1690311			
L 3008	COIL				2.5T2.0D0.5UEW R	L0021799A			
L 3009	COIL				2.5T2.0D0.5UEW R	L0021799A			
L 3010	COIL				6.5T2.0D0.5UEW R	L0021803A			
L 3011	M.RFC	0.012uH			HK2125 12NK-T	L1690378			
L 3012	COIL				2.5T2.0D0.5UEW R	L0021799A			
L 3013	COIL				2.5T2.0D0.5UEW R	L0021799A			
L 3014	M.RFC	0.068uH			HK2125 68NK-T	L1690387			
L 3015	M.RFC	0.068uH			LER015T068K	L1690261			
L 3016	M.RFC	0.068uH			LER015T068K	L1690261			
L 3017	M.RFC	120uH			FLC32T-121J	L1690228			
L 3018	M.RFC	0.56uH			LER015TR56M	L1690116			
L 3019	M.RFC	0.56uH			LK2125 R56K-T	L1690316			
L 3020	M.RFC	0.022uH			HK2125 22NK-T	L1690381			
L 3022	M.RFC	0.015uH			HK2125 15NK-T	L1690379			
L 3023	M.RFC	0.33uH			LK2125 R33K-T	L1690313			
L 3024	M.RFC	0.22uH			LK2125 R22K-T	L1690311			
L 3025	M.RFC	0.56uH			LK2125 R56K-T	L1690316			
L 3026	COIL				1.5T1.8D0.4UEW R	L0022283			
L 3027	COIL				1.5T1.8D0.4UEW R	L0022283			
L 3028	COIL				1.5T1.8D0.4UEW R	L0022283			
L 3029	COIL				1.5T1.8D0.4UEW R	L0022283			
L 3031	M.RFC	0.012uH			HK2125 12NK-T	L1690378			
Q 3001	TRANSISTOR				2SC4537 TR	G3345377			D-3
Q 3002	IC				M67799MA-21	G1091938			A-2
Q 3003	TRANSISTOR				2SC4245 TE85R	G3342457			C-3
Q 3004	TRANSISTOR				DTC124EE TL	G3070109			C-3
Q 3005	TRANSISTOR				2SA1586Y TE85R	G3115867Y			D-2
Q 3006	TRANSISTOR				2SB1132 T100 Q	G3211327Q			A-2
Q 3007	TRANSISTOR				DTA124EE TL	G3070116			C-2
Q 3008	TRANSISTOR				2SC4617 TL R	G3346178R			D-2
Q 3009	IC				FQ7925	G1091710			C-2
Q 3010	TRANSISTOR				XP1501-(TX)	G3070143			D-2
Q 3011	TRANSISTOR				XP1401-(TX)	G3070142			D-3
Q 3012	TRANSISTOR				DTC124EE TL	G3070109			D-2
Q 3013	TRANSISTOR				2SC4226-T2B R24	G3342267D			A-1
Q 3014	TRANSISTOR				2SC4215Y TE85R	G3342157Y			A-1
Q 3015	FET				2SK880GR TE85R	G3808807G			D-1
Q 3016	TRANSISTOR				UMB10N TN	G3070108			C-2
Q 3017	TRANSISTOR				XP4213-(TX)	G3070140			D-2
Q 3018	IC				RH5RH501A-T1	G1091603			A-3
Q 3019	TRANSISTOR				DTA124EE TL	G3070116			D-1
Q 3020	TRANSISTOR				DTC124EE TL	G3070109			D-2

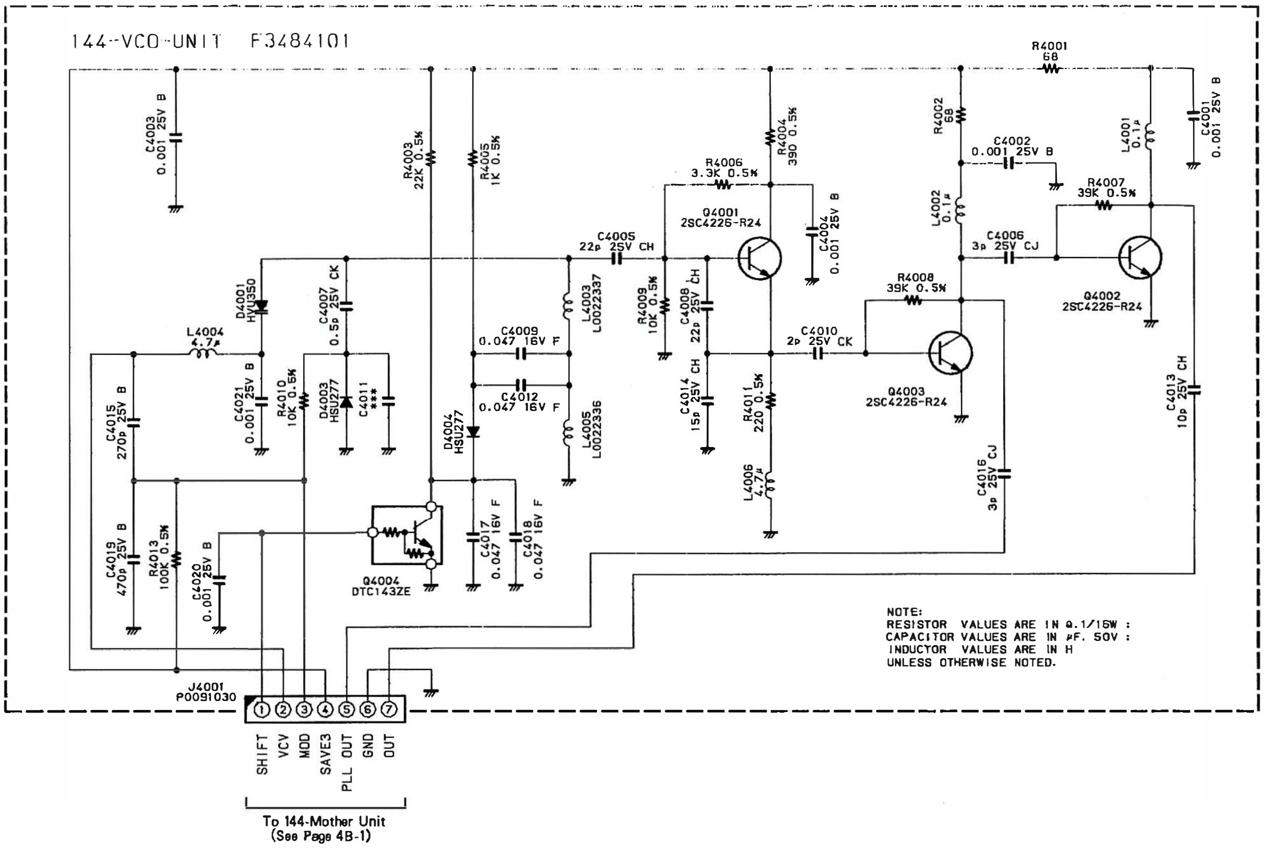
430-MOTHER Unit

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
Q 3021	IC				TA75S01F TE85R	G1091593			D-3
Q 3022	TRANSISTOR				UMB10N TN	G3070108			D-2
Q 3023	TRANSISTOR				DTC124EE TL	G3070109			D-1
Q 3024	IC				UPB587G-E1	G1091326			B-2
Q 3025	IC				TC7S00F TE85R	G1091442			B-2
Q 3026	TRANSISTOR				UMB10N TN	G3070108			C-2
Q 3027	TRANSISTOR				DTA143XE TL	G3070093			D-3
Q 3028	TRANSISTOR				DTC124EE TL	G3070109			D-2
Q 3029	IC				TK11230M	G1091656			B-3
Q 3030	TRANSISTOR				2SB1132 T100 Q	G3211327Q			B-3
Q 3033	TRANSISTOR				XP1501-(TX)	G3070143			B-3
Q 3034	TRANSISTOR				2SC4215Y TE85R	G3342157Y			C-1
Q 3035	TRANSISTOR				2SC4226-T2B R24	G3342267D			C-1
Q 3036	TRANSISTOR				2SC4617 TL R	G3346178R			C-3
Q 3037	IC				MC3372VMEL	G1091654			C-1
Q 3038	TRANSISTOR				2SC4226-T2B R24	G3342267D			C-1
Q 3039	TRANSISTOR				2SC4226-T2B R24	G3342267D			D-1
Q 3040	TRANSISTOR				2SC4617 TL R	G3346178R			C-3
Q 3041	IC				TC4W66FU TE12L	G1091676			D-3
Q 3042	TRANSISTOR				DTC124EE TL	G3070109			D-2
R 3001	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 3002	CHIP RES.	4.7K	1/16W	0.5%	RR0510P-472-D	J24189135			
R 3003	CHIP RES.	6.8K	1/16W	0.5%	RR0510P-682-D	J24189139			
R 3004	CHIP RES.	15K	1/16W	0.5%	RR0510R-153-D	J24189147			
R 3005	CHIP RES.	4.7K	1/16W	0.5%	RR0510P-472-D	J24189135			
R 3006	CHIP RES.	22K	1/16W	0.5%	RR0510R-223-D	J24189151			
R 3007	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 3008	CHIP RES.	4.7K	1/16W	0.5%	RR0510P-472-D	J24189135			
R 3009	CHIP RES.	330	1/16W	0.5%	RR0510P-331-D	J24189107			
R 3010	CHIP RES.	10	1/16W	5%	RMC1/16S 100JTH	J24189001			
R 3011	CHIP RES.	470	1/16W	0.5%	RR0510P-471-D	J24189111			
R 3012	CHIP RES.	1K	1/16W	0.5%	RR0510P-102-D	J24189119			
R 3013	CHIP RES.	470	1/16W	0.5%	RR0510P-471-D	J24189111			
R 3014	CHIP RES.	10	1/16W	5%	RMC1/16S 100JTH	J24189001			
R 3015	CHIP RES.	10	1/16W	5%	RMC1/16S 100JTH	J24189001			
R 3016	CHIP RES.	470	1/16W	0.5%	RR0510P-471-D	J24189111			
R 3017	CHIP RES.	47	1/16W	5%	RMC1/16S 470JTH	J24189009			
R 3018	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 3019	CHIP RES.	56	1/10W	5%	RMC1/10T 560J	J24205560			
R 3020	CHIP RES.	2.2K	1/16W	0.5%	RR0510P-222-D	J24189127			
R 3021	CHIP RES.	1K	1/16W	0.5%	RR0510P-102-D	J24189119			
R 3022	CHIP RES.	1K	1/16W	0.5%	RR0510P-102-D	J24189119			
R 3023	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 3024	CHIP RES.	2.2K	1/16W	0.5%	RR0510P-222-D	J24189127			
R 3026	CHIP RES.	220K	1/16W	5%	RMC1/16S 224JTH	J24189053			
R 3027	CHIP RES.	1K	1/16W	0.5%	RR0510P-102-D	J24189119			
R 3028	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 3029	CHIP RES.	33K	1/16W	0.5%	RR0510R-333-D	J24189155			

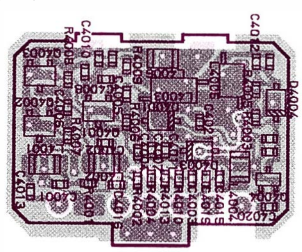
REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
R 3030	CHIP RES.	1K	1/16W	0.5%	RR0510P-102-D	J24189119			
R 3031	CHIP RES.	1K	1/16W	0.5%	RR0510P-102-D	J24189119			
R 3032	CHIP RES.	2.2K	1/16W	0.5%	RR0510P-222-D	J24189127			
R 3033	CHIP RES.	1K	1/16W	0.5%	RR0510P-102-D	J24189119			
R 3034	CHIP RES.	47K	1/16W	0.5%	RR0510R-473-D	J24189159			
R 3035	CHIP RES.	22K	1/16W	0.5%	RR0510R-223-D	J24189151			
R 3036	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 3037	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 3038	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 3039	CHIP RES.	47	1/16W	5%	RMC1/16S 470JTH	J24189009			
R 3040	CHIP RES.	6.8K	1/16W	0.5%	RR0510P-682-D	J24189139			
R 3041	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 3042	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 3043	CHIP RES.	470	1/16W	0.5%	RR0510P-471-D	J24189111			
R 3044	CHIP RES.	33K	1/16W	0.5%	RR0510R-333-D	J24189155			
R 3045	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 3046	CHIP RES.	1K	1/16W	0.5%	RR0510P-102-D	J24189119			
R 3047	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 3049	CHIP RES.	3.9K	1/16W	0.5%	RR0510P-392-D	J24189133			
R 3050	CHIP RES.	4.7K	1/16W	0.5%	RR0510P-472-D	J24189135			
R 3051	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 3052	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 3053	CHIP RES.	10	1/16W	5%	RMC1/16S 100JTH	J24189001			
R 3056	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 3057	CHIP RES.	330	1/16W	0.5%	RR0510P-331-D	J24189107			
R 3058	CHIP RES.	47K	1/16W	0.5%	RR0510R-473-D	J24189159			
R 3059	CHIP RES.	33K	1/16W	0.5%	RR0510R-333-D	J24189155			
R 3062	CHIP RES.	2.2K	1/16W	0.5%	RR0510P-222-D	J24189127			
R 3063	CHIP RES.	680K	1/16W	5%	RMC1/16S 684JTH	J24189059			
R 3064	CHIP RES.	1K	1/16W	0.5%	RR0510P-102-D	J24189119			
R 3065	CHIP RES.	15K	1/16W	0.5%	RR0510R-153-D	J24189147			
R 3067	CHIP RES.	2.2K	1/16W	0.5%	RR0510P-222-D	J24189127			
R 3068	CHIP RES.	220K	1/16W	5%	RMC1/16S 224JTH	J24189053			
R 3069	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 3070	CHIP RES.	2.2K	1/16W	0.5%	RR0510P-222-D	J24189127			
R 3071	CHIP RES.	2.2K	1/16W	0.5%	RR0510P-222-D	J24189127			
R 3072	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 3073	CHIP RES.	3.3K	1/16W	0.5%	RR0510P-332-D	J24189131			
R 3074	CHIP RES.	1.5K	1/16W	0.5%	RR0510P-152-D	J24189123			
R 3076	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 3077	CHIP RES.	47K	1/16W	0.5%	RR0510R-473-D	J24189159			
R 3078	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 3079	CHIP RES.	470	1/16W	0.5%	RR0510P-471-D	J24189111			
R 3080	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 3081	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 3082	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 3083	CHIP RES.	470	1/16W	0.5%	RR0510P-471-D	J24189111			
R 3084	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
R 3085	CHIP RES.	1.8K	1/16W	0.5%	RR0510P-182-D	J24189125			

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
R 3086	CHIP RES.	4.7K	1/16W	0.5%	RR0510P-472-D	J24189135			
R 3087	CHIP RES.	33K	1/16W	0.5%	RR0510R-333-D	J24189155			
R 3088	CHIP RES.	33K	1/16W	0.5%	RR0510R-333-D	J24189155			
R 3089	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 3090	CHIP RES.	1.8K	1/16W	0.5%	RR0510P-182-D	J24189125			
R 3091	CHIP RES.	470	1/16W	0.5%	RR0510P-471-D	J24189111			
R 3092	CHIP RES.	0	1/16W		RMC1/16S JPTH	J24189070			
R 3093	CHIP RES.	4.7K	1/16W	0.5%	RR0510P-472-D	J24189135			
R 3094	CHIP RES.	1.5K	1/16W	0.5%	RR0510P-152-D	J24189123			
R 3095	CHIP RES.	1K	1/16W	0.5%	RR0510P-102-D	J24189119			
R 3096	CHIP RES.	33K	1/16W	0.5%	RR0510R-333-D	J24189155			
R 3097	CHIP RES.	3.3K	1/16W	0.5%	RR0510P-332-D	J24189131			
R 3098	CHIP RES.	47K	1/16W	0.5%	RR0510R-473-D	J24189159			
R 3099	CHIP RES.	27	1/16W	5%	RMC1/16S 270JTH	J24189006			
R 3100	CHIP RES.	470K	1/16W	5%	RMC1/16S 474JTH	J24189057			
R 3101	CHIP RES.	3.3K	1/16W	0.5%	RR0510P-332-D	J24189131			
TC3001	TRIMMER CAP.	20pF			ECR-LB020E12	K91000188			
TC3002	CHIP TRIMMER	6pF			CTZ3S-06A-W1-P	K91000206			
TC3003	CHIP TRIMMER	6pF			CTZ3S-06A-W1-P	K91000206			
TC3004	CHIP TRIMMER	6pF			CTZ3S-06A-W1-P	K91000206			
TC3005	CHIP TRIMMER	6pF			CTZ3S-06A-W1-P	K91000206			
TH3001	THERMISTOR				157-203-55009TP	G9090045			
VR3001	POT.	10K			RH03AVA14X01A	J50785103			
X 3001	XTAL	12.80000MHz				H0103091			
X 3002	XTAL	58.070MHz				H0103075			
XF3001	XTAL				D58515AC1	H1102252			
	HOLDER PLATE (PM.)					R0150700			

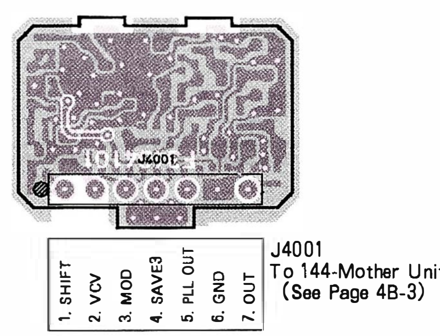
Circuit Diagram



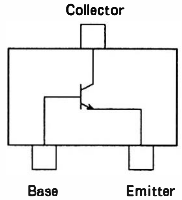
Parts Layout



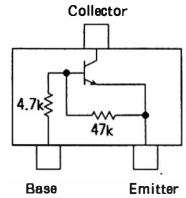
obverse view of component side



obverse view of connector side



2SC4226 (R24)
(Q4001, 4002, 4003)



DTC143ZE (E23)
(Q4004)

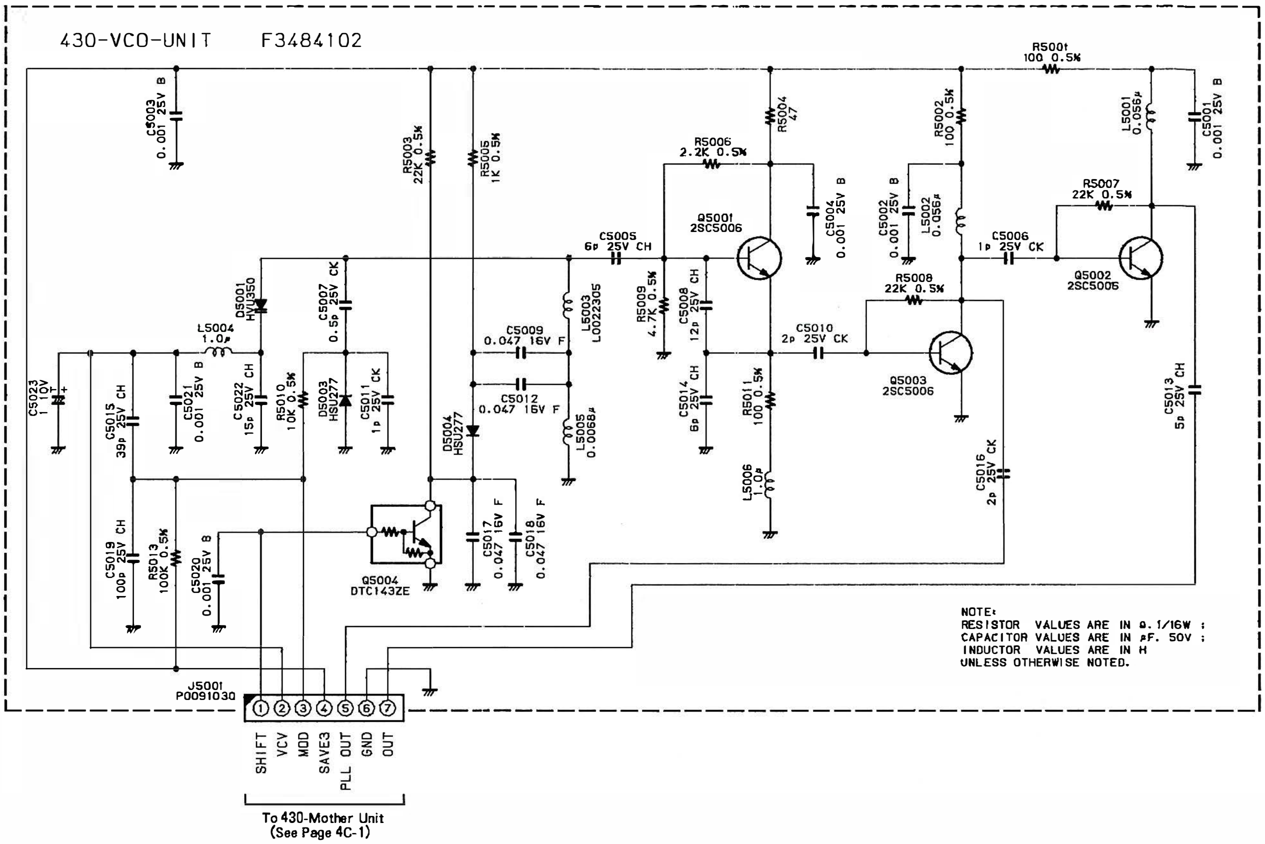
Parts List

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
		*** 144-VCO UNIT ***							
	PCB With Components					CA1228001			
	Printed Circuit Board					F3484101			
C 4001	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 4002	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 4003	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 4004	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 4005	CHIP CAP.	22pF	25V	CH	TMK105CH220J-F	K22148222			
C 4006	CHIP CAP.	3pF	25V	CJ	TMK105CJ030C-F	K22148207			
C 4007	CHIP CAP.	0.5pF	25V	CK	TMK105CK0R5C-F	K22148204			
C 4008	CHIP CAP.	22pF	25V	CH	TMK105CH220J-F	K22148222			
C 4009	CHIP CAP.	0.047uF	16V	F	EMK105F473Z-F	K22129002			
C 4010	CHIP CAP.	2pF	25V	CK	TMK105CK020C-F	K22148206			
C 4012	CHIP CAP.	0.047uF	16V	F	EMK105F473Z-F	K22129002			
C 4013	CHIP CAP.	10pF	25V	CH	TMK105CH100D-F	K22148214			
C 4014	CHIP CAP.	15pF	25V	CH	TMK105CH150J-F	K22148218			
C 4015	CHIP CAP.	270pF	25V	B	TMK105B271K-F	K22148813			
C 4016	CHIP CAP.	3pF	25V	CJ	TMK105CJ030C-F	K22148207			
C 4017	CHIP CAP.	0.047uF	16V	F	EMK105F473Z-F	K22129002			
C 4018	CHIP CAP.	0.047uF	16V	F	EMK105F473Z-F	K22129002			
C 4019	CHIP CAP.	470pF	25V	B	TMK105B471K-F	K22148816			
C 4020	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 4021	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
D 4001	DIODE				HVU350-TR	G2070380			
D 4003	DIODE				HSU277	G2070118			
D 4004	DIODE				HSU277	G2070118			
J 4001	CONNECTOR				9213B-1-07C-T	P0091030			
L 4001	M.RFC	0.1uH			LK2125 R10K-T	L1690307			
L 4002	M.RFC	0.1uH			LK2125 R10K-T	L1690307			
L 4003	COIL				LE231110CL01	L0022337			
L 4004	M.RFC	4.7uH			LK2125 4R7K-T	L1690327			
L 4005	COIL				LE231107CL01	L0022336			
L 4006	M.RFC	4.7uH			LK2125 4R7K-T	L1690327			
Q 4001	TRANSISTOR				2SC4226-T2B R24	G3342267D			
Q 4002	TRANSISTOR				2SC4226-T2B R24	G3342267D			
Q 4003	TRANSISTOR				2SC4226-T2B R24	G3342267D			
Q 4004	TRANSISTOR				DTC143ZE TL	G3070102			
R 4001	CHIP RES.	68	1/16W	5%	RMC1/16S 680JTH	J24189011			
R 4002	CHIP RES.	68	1/16W	5%	RMC1/16S 680JTH	J24189011			
R 4003	CHIP RES.	22K	1/16W	0.5%	RR0510R-223-D	J24189151			
R 4004	CHIP RES.	390	1/16W	0.5%	RR0510P-391-D	J24189109			

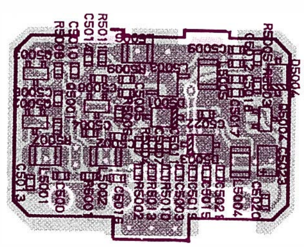
144-VCO Unit

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
R 4005	CHIP RES.	1K	1/16W	0.5%	RR0510P-102-D	J24189119			
R 4006	CHIP RES.	3.3K	1/16W	0.5%	RR0510P-332-D	J24189131			
R 4007	CHIP RES.	39K	1/16W	0.5%	RR0510R-393-D	J24189157			
R 4008	CHIP RES.	39K	1/16W	0.5%	RR0510R-393-D	J24189157			
R 4009	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 4010	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 4011	CHIP RES.	220	1/16W	0.5%	RR0510P-221-D	J24189103			
R 4013	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
	SHIELD CASE (VCO)					R0150240			

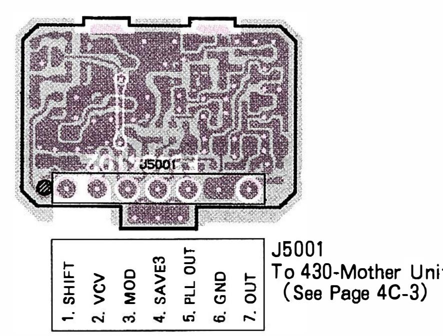
Circuit Diagram



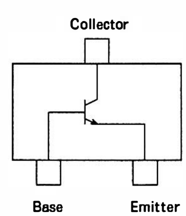
Parts Layout



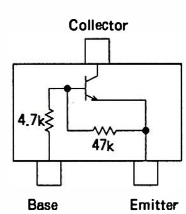
obverse view of component side



obverse view of connector side



2SC5006 (24)
(Q5001, 5002, 5003)



DTC143ZE (E23)
(Q5004)

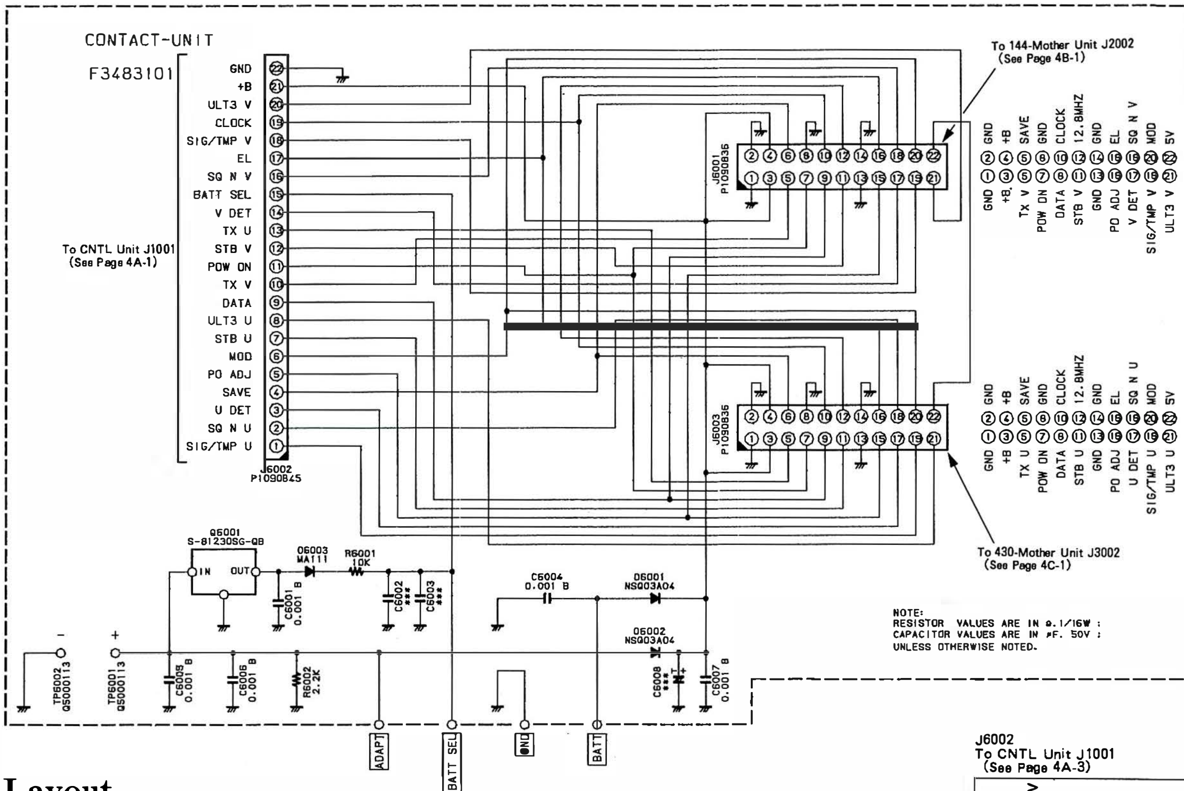
Parts List

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
		*** 430-VCO UNIT ***							
	PCB With Components					CA1229001			
	Printed Circuit Board					F3484102			
C 5001	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 5002	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 5003	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 5004	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 5005	CHIP CAP.	6pF	25V	CH	TMK105CH060D-F	K22148210			
C 5006	CHIP CAP.	1pF	25V	CK	TMK105CK010C-F	K22148205			
C 5007	CHIP CAP.	0.5pF	25V	CK	TMK105CK0R5C-F	K22148204			
C 5008	CHIP CAP.	12pF	25V	CH	TMK105CH120J-F	K22148216			
C 5009	CHIP CAP.	0.047uF	16V	F	EMK105F473Z-F	K22129002			
C 5010	CHIP CAP.	2pF	25V	CK	TMK105CK020C-F	K22148206			
C 5011	CHIP CAP.	1pF	25V	CK	TMK105CK010C-F	K22148205			
C 5012	CHIP CAP.	0.047uF	16V	F	EMK105F473Z-F	K22129002			
C 5013	CHIP CAP.	5pF	25V	CH	TMK105CH050C-F	K22148209			
C 5014	CHIP CAP.	6pF	25V	CH	TMK105CH060D-F	K22148210			
C 5015	CHIP CAP.	39pF	25V	CH	TMK105CH390J-F	K22148228			
C 5016	CHIP CAP.	2pF	25V	CK	TMK105CK020C-F	K22148206			
C 5017	CHIP CAP.	0.047uF	16V	F	EMK105F473Z-F	K22129002			
C 5018	CHIP CAP.	0.047uF	16V	F	EMK105F473Z-F	K22129002			
C 5019	CHIP CAP.	100pF	25V	CH	TMK105CH101J-F	K22148238			
C 5020	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 5021	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 5022	CHIP CAP.	15pF	25V	CH	TMK105CH150J-F	K22148218			
C 5023	TANTALUM CHIP CAP.	1uF	10V		TESVSP1A105M-8R	K78100032			
D 5001	DIODE				HVU350-TR	G2070380			
D 5003	DIODE				HSU277	G2070118			
D 5004	DIODE				HSU277	G2070118			
J 5001	CONNECTOR				9213B-1-07C-T	P0091030			
L 5001	M.RFC	0.056uH			HK2125 56NK-T	L1690386			
L 5002	M.RFC	0.056uH			HK2125 56NK-T	L1690386			
L 5003	COIL				LE231104CL01	L0022305			
L 5004	M.RFC	1.0uH			LK2125 1R0K-T	L1690319			
L 5005	M.RFC	0.0068uH			HK2125 6N8K-T	L1690375			
L 5006	M.RFC	1.0uH			LK2125 1R0K-T	L1690319			
Q 5001	TRANSISTOR				2SC5006-T1	G3350068			
Q 5002	TRANSISTOR				2SC5006-T1	G3350068			
Q 5003	TRANSISTOR				2SC5006-T1	G3350068			
Q 5004	TRANSISTOR				DTC143ZE TL	G3070102			
R 5001	CHIP RES.	100	1/16W	0.5%	RR0510P-101-D	J24189095			

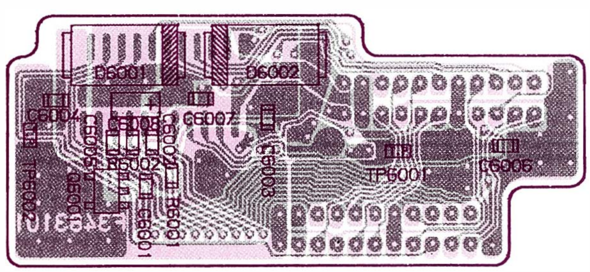
430-VCO Unit

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
R 5002	CHIP RES.	100	1/16W	0.5%	RR0510P-101-D	J24189095			
R 5003	CHIP RES.	22K	1/16W	0.5%	RR0510R-223-D	J24189151			
R 5004	CHIP RES.	47	1/16W	5%	RMC1/16S 470JTH	J24189009			
R 5005	CHIP RES.	1K	1/16W	0.5%	RR0510P-102-D	J24189119			
R 5006	CHIP RES.	2.2K	1/16W	0.5%	RR0510P-222-D	J24189127			
R 5007	CHIP RES.	22K	1/16W	0.5%	RR0510R-223-D	J24189151			
R 5008	CHIP RES.	22K	1/16W	0.5%	RR0510R-223-D	J24189151			
R 5009	CHIP RES.	4.7K	1/16W	0.5%	RR0510P-472-D	J24189135			
R 5010	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143			
R 5011	CHIP RES.	100	1/16W	0.5%	RR0510P-101-D	J24189095			
R 5013	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167			
	SHIELD CASE (VCO)					R0150240			

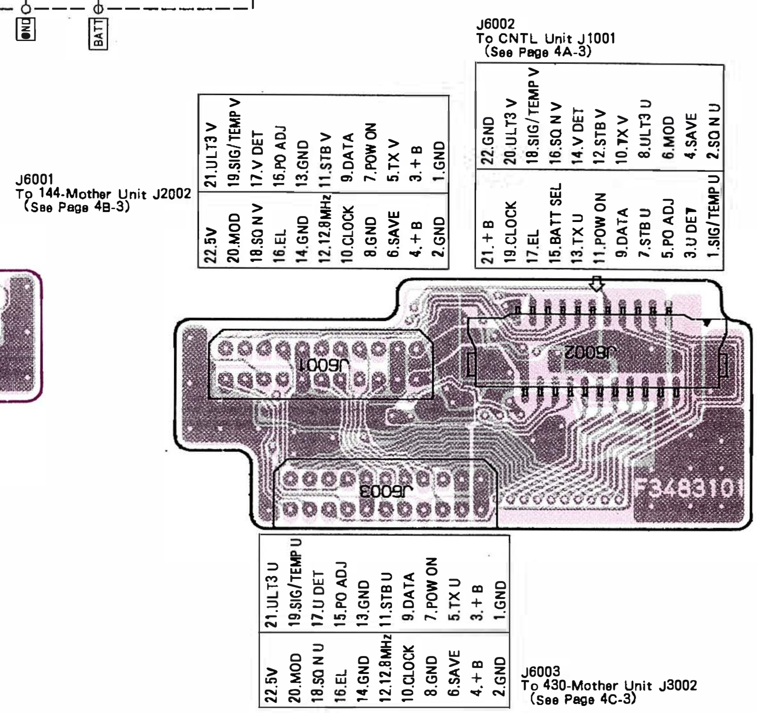
Circuit Diagram



Parts Layout

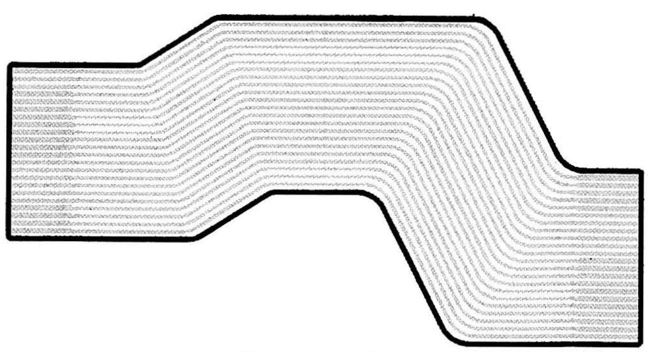


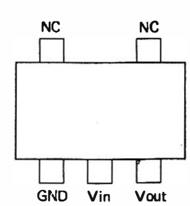
obverse view of component side



obverse view of connector side

Flat Ribbon Cable (P/N F3486000)





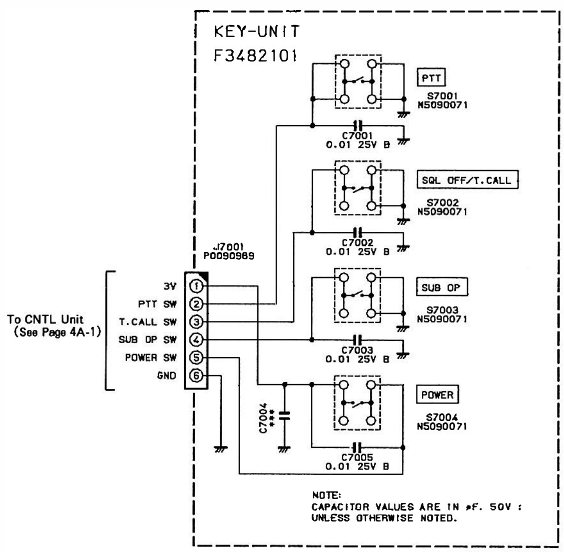
S-81230SG (QF)
(Q6001)

Parts List

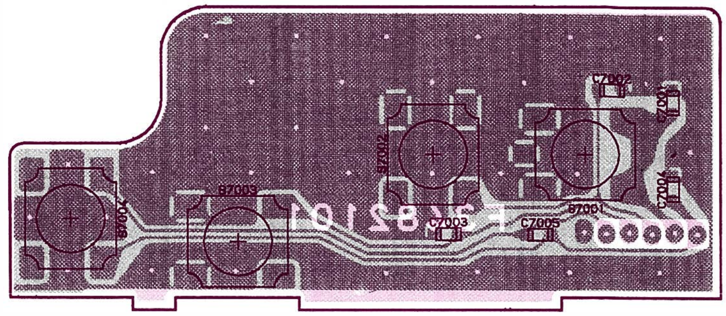
REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
		*** CONTACT UNIT ***							
	PCB With Components (W/ FPC Cable)					CA1230001			
	Printed Circuit Board					F3483101			
	FPC Cable					F3486000			
C 6001	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 6004	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 6005	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 6006	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 6007	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
D 6001	DIODE				NSQ03A04-TE16L3	G2070274			
D 6002	DIODE				NSQ03A04-TE16L3	G2070274			
D 6003	DIODE				MA111-(TX)	G2070338			
J 6001	CONNECTOR				22R-JED	P1090836			
J 6002	CONNECTOR				TE2412-FX05B22F	P1090845			
J 6003	CONNECTOR				22R-JED	P1090836			
Q 6001	IC				S-81230SG-QB-T1	G1091826			
R 6001	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103			
R 6002	CHIP RES.	2.2K	1/16W	5%	RMC1/16 222JATP	J24185222			
TP6001	CHECK TERMINAL				RCU00000C	Q5000113			
TP6002	CHECK TERMINAL				RCU00000C	Q5000113			

Notes

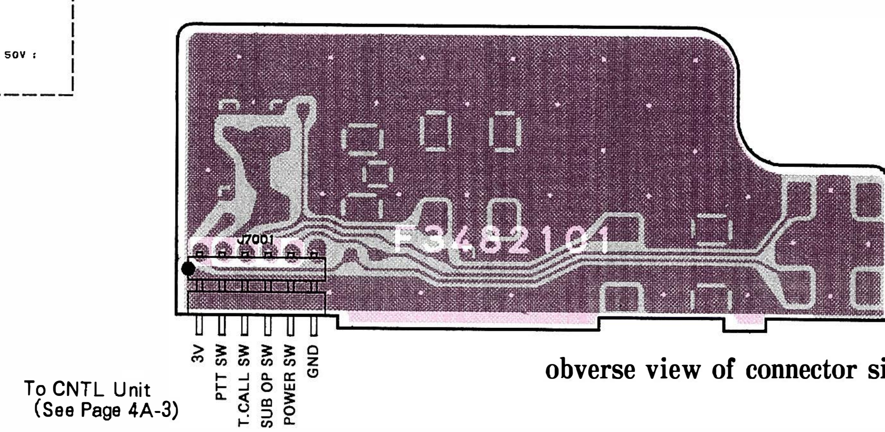
Circuit Diagram



Parts Layout



obverse view of component side

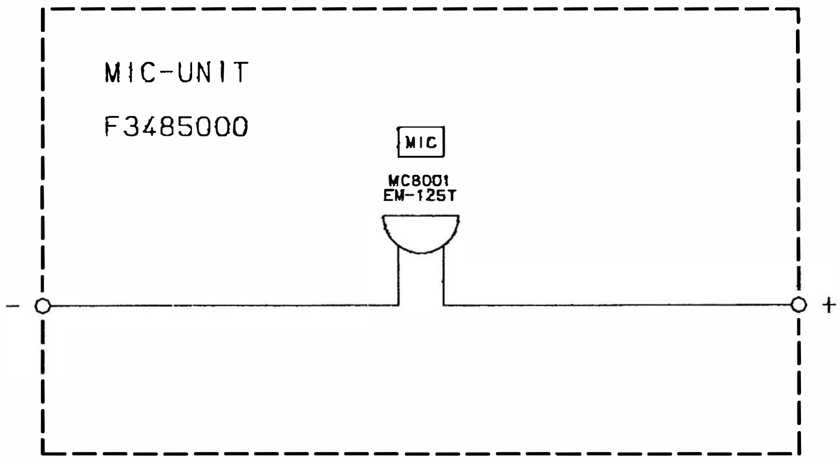


obverse view of connector side

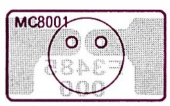
Parts List

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
		*** KEY UNIT ***							
	PCB With Components					CA1221001			
	Printed Circuit Board					F3482101			
C 7001	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802			
C 7002	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802			
C 7003	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802			
C 7005	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802			
J 7001	CONNECTOR				9230B-1-06Z055-T	P0090989			
S 7001	TACT SWITCH				SOP-112HST	N5090071			
S 7002	TACT SWITCH				SOP-112HST	N5090071			
S 7003	TACT SWITCH				SOP-112HST	N5090071			
S 7004	TACT SWITCH				SOP-112HST	N5090071			

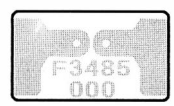
Circuit Diagram



Parts Layout



obverse view of microphone side



obverse view of PCB

Parts List

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
		*** MIC UNIT ***							
	PCB With Components					CA1323001			
	Printed Circuit Board					F3485000			
MC8001	MIC ELEMENT				EM-125T	M3290025			

YAESU

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E05119000 (411w-0Y)